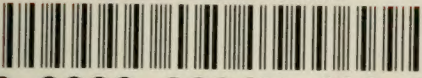


BOSTON PUBLIC LIBRARY



3 9999 06317 492 2

980



# *Smithsonian Year*

1980







# *Smithsonian Year • 1980*

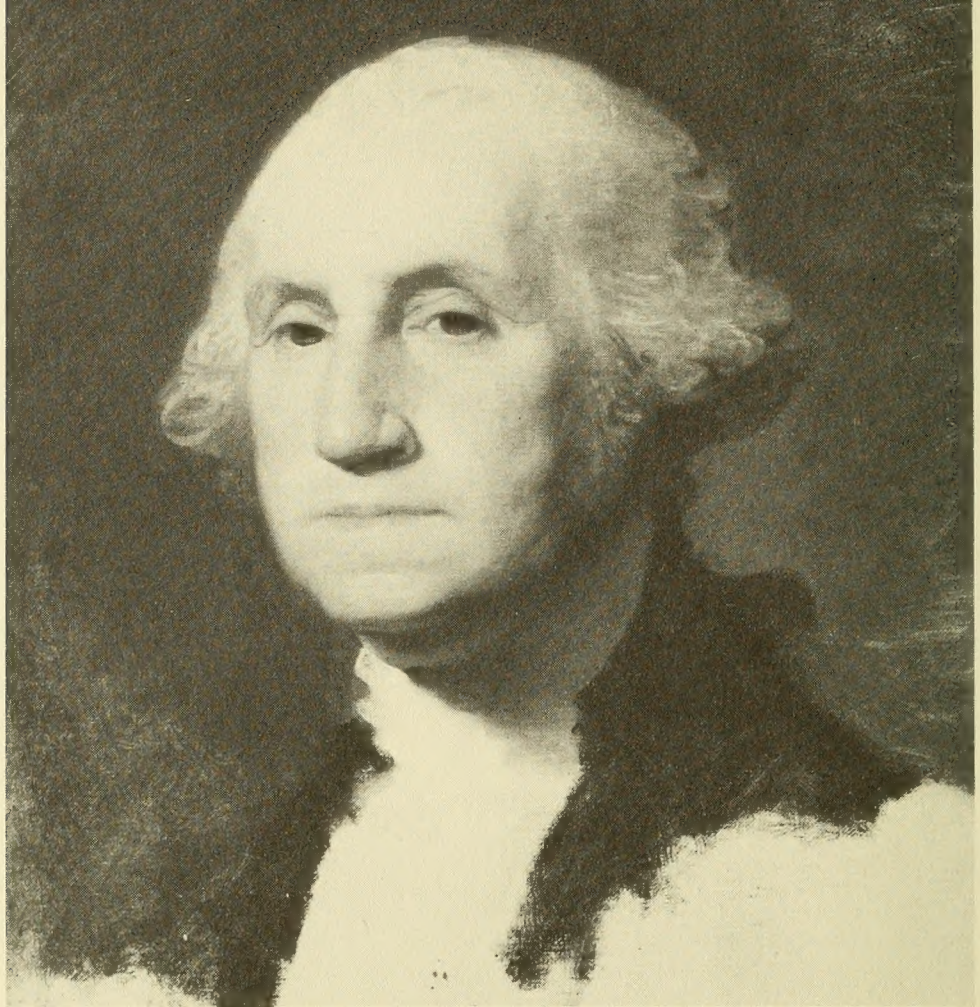
---

Boston Public Library  
Superintendent of Documents

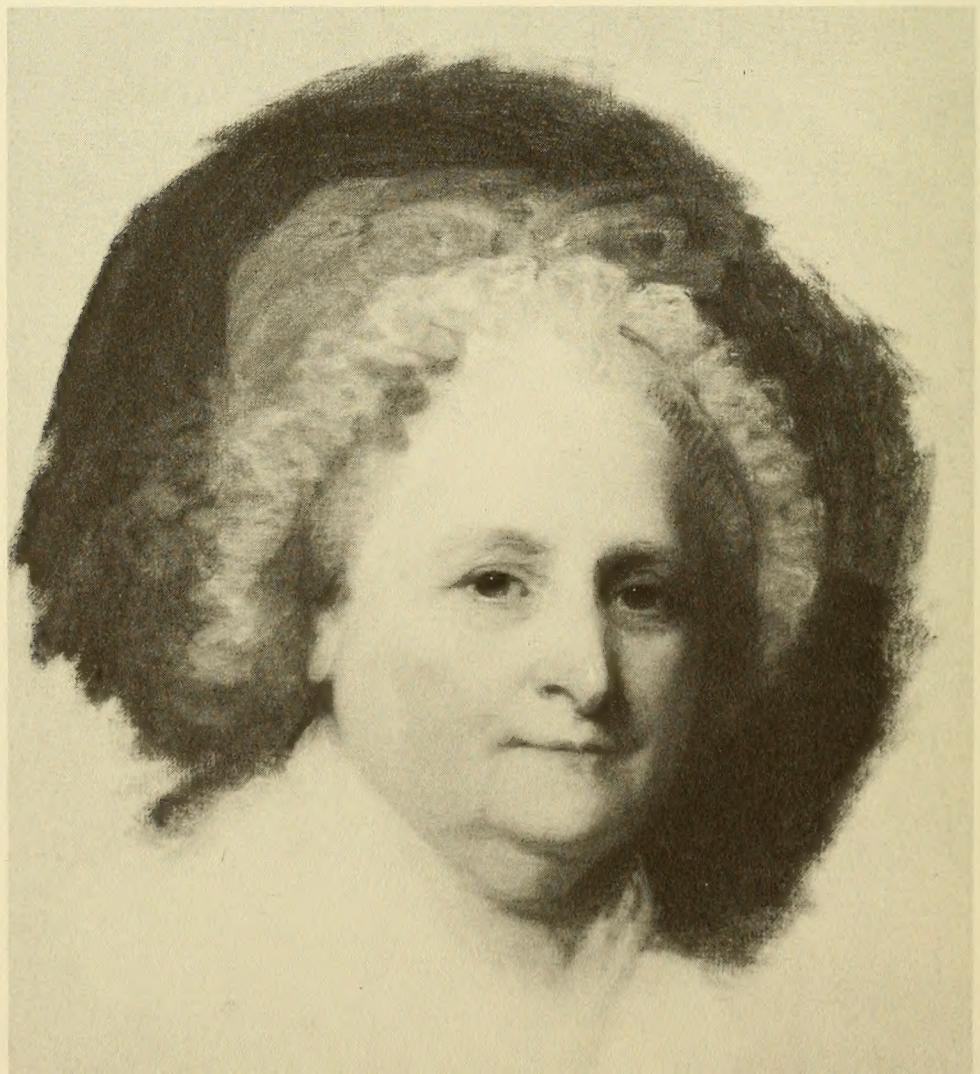
MAY 15 1981

DEPOSITORY





*Evidence is an aggregate of things, signs and symbols, past and present.*  
The portraits [details shown] of George and Martha Washington, owned jointly by the Smithsonian Institution and the Museum of Fine Arts, Boston, were painted by Gilbert Stuart from life in 1796.





# *Smithsonian Year • 1980*

---

ANNUAL REPORT OF THE  
SMITHSONIAN INSTITUTION  
FOR THE YEAR ENDED  
SEPTEMBER 30, 1980



*Smithsonian Institution Press • City of Washington • 1981*



For sale by the Superintendent of Documents, U.S. Government Printing Office  
Washington, D.C. 20402 (paper cover) Stock Number: 047-000-00368-7



## *The Smithsonian Institution*

---

The Smithsonian Institution was created by act of Congress in 1846 in accordance with the terms of the will of James Smithson of England, who in 1826 bequeathed his property to the United States of America "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." After receiving the property and accepting the trust, Congress incorporated the Institution in an "establishment," whose statutory members are the President, the Vice-President, the Chief Justice, and the heads of the executive departments, and vested responsibility for administering the trust in the Smithsonian Board of Regents.

### THE ESTABLISHMENT

Jimmy Carter, *President of the United States*

Walter F. Mondale, *Vice-President of the United States*

Warren E. Burger, *Chief Justice of the United States*

Cyrus R. Vance, *Secretary of State*<sup>1</sup>

Edmund S. Muskie, *Secretary of State*<sup>2</sup>

G. William Miller, *Secretary of the Treasury*

Harold Brown, *Secretary of Defense*

Benjamin R. Civiletti, *Attorney General*

Cecil D. Andrus, *Secretary of the Interior*

Bob S. Bergland, *Secretary of Agriculture*

Juanita M. Kreps, *Secretary of Commerce*<sup>3</sup>

Philip M. Klutznick, *Secretary of Commerce*<sup>4</sup>

F. Ray Marshall, *Secretary of Labor*

Patricia Roberts Harris, *Secretary of Health, Education, and Welfare*

Moon Landrieu, *Secretary of Housing and Urban Development*

Neil Goldschmidt, *Secretary of Transportation*

Charles W. Duncan, *Secretary of Energy*

---

<sup>1</sup> Resigned April 1980. <sup>2</sup> Sworn in May 8, 1980. <sup>3</sup> Resigned November 1, 1979.

<sup>4</sup> Sworn in January 9, 1980.

## *Board of Regents and Secretary • September 30, 1980*

---

REGENTS OF THE INSTITUTION	Warren E. Burger, <i>Chief Justice of the United States, ex officio, Chancellor</i> Walter F. Mondale, <i>Vice-President of the United States, ex officio</i> Henry M. Jackson, <i>senator from Washington</i> Barry Goldwater, <i>senator from Arizona</i> Robert B. Morgan, <i>senator from North Carolina</i> Silvio O. Conte, <i>representative from Massachusetts</i> Norman Y. Mineta, <i>representative from California</i> Frank Thompson, Jr., <i>representative from New Jersey</i> Anne L. Armstrong, <i>citizen of Texas</i> J. Paul Austin, <i>citizen of Georgia</i> William G. Bowen, <i>citizen of New Jersey</i> William A. M. Burden, <i>citizen of New York</i> Murray Gell-Mann, <i>citizen of California</i> A. Leon Higginbotham, Jr., <i>citizen of Pennsylvania</i> Carlisle H. Humelsine, <i>citizen of Virginia</i> James E. Webb, <i>citizen of the District of Columbia</i>
EXECUTIVE COMMITTEE	Warren E. Burger, <i>Chancellor</i> William A. M. Burden Carlisle H. Humelsine James E. Webb ( <i>Chairman</i> )
THE SECRETARY	S. Dillon Ripley  Phillip S. Hughes, <i>Under Secretary</i> Charles Blitzer, <i>Assistant Secretary for History and Art</i> David Challinor, <i>Assistant Secretary for Science</i> Joseph Coudon, <i>Special Assistant to the Secretary</i> Julian T. Euell, <i>Assistant Secretary for Public Service</i> James M. Hobbins, <i>Executive Assistant to the Secretary</i> Christian C. Hohenlohe, <i>Treasurer</i> John F. Jameson, <i>Assistant Secretary for Administration</i> Paul N. Perrot, <i>Assistant Secretary for Museum Programs</i> Peter G. Powers, <i>General Counsel</i> James McK. Symington, <i>Director, Office of Membership and Development</i> Lawrence E. Taylor, <i>Coordinator of Public Information</i>



## CONTENTS

<i>page</i>	<b>v</b>	<b>THE SMITHSONIAN INSTITUTION</b>
	<b>vi</b>	<b>BOARD OF REGENTS AND SECRETARY</b>
	<b>3</b>	<b>STATEMENT BY THE SECRETARY</b>
	<b>35</b>	<b>FINANCIAL REPORT</b>
	<b>71</b>	<b>SCIENCE</b>
	<b>71</b>	Chesapeake Bay Center for Environmental Studies
	<b>82</b>	Fort Pierce Bureau
	<b>91</b>	National Air and Space Museum
	<b>99</b>	National Museum of Man, Center for the Study of Man
	<b>105</b>	National Museum of Natural History
	<b>122</b>	National Zoological Park
	<b>132</b>	Office of Biological Conservation
	<b>133</b>	Office of Fellowships and Grants
	<b>139</b>	Radiation Biology Laboratory
	<b>150</b>	Smithsonian Astrophysical Observatory
	<b>169</b>	Smithsonian Tropical Research Institute
	<b>181</b>	<b>HISTORY AND ART</b>
	<b>181</b>	Archives of American Art
	<b>185</b>	Cooper-Hewitt Museum
	<b>190</b>	Freer Gallery of Art
	<b>194</b>	Hirshhorn Museum and Sculpture Garden
	<b>198</b>	Joseph Henry Papers
	<b>199</b>	Museum of African Art
	<b>203</b>	National Collection of Fine Arts
	<b>206</b>	National Museum of History and Technology
	<b>211</b>	National Portrait Gallery
	<b>215</b>	Office of American Studies
	<b>217</b>	Office of Folklife Programs
	<b>223</b>	<b>MUSEUM PROGRAMS</b>
	<b>223</b>	Conservation Analytical Laboratory
	<b>228</b>	National Museum Act Programs

## MUSEUM PROGRAMS, Continued

- 231 Office of Exhibits Central
- 236 Office of Horticulture
- 241 Office of International Activities
- 244 Office of Museum Programs
- 251 Office of the Registrar
- 253 Smithsonian Institution Archives
- 255 Smithsonian Institution Libraries
- 259 Smithsonian Institution Traveling Exhibition Service
  
- 265 PUBLIC SERVICE
- 265 Anacostia Neighborhood Museum
- 266 Division of Performing Arts
- 269 International Exchange Service
- 269 Office of Elementary and Secondary Education
- 273 Office of Smithsonian Symposia and Seminars
- 275 Office of Telecommunications
- 276 Smithsonian Exposition Books
- 278 Smithsonian Institution Press
- 281 *Smithsonian Magazine*
- 282 Visitor Information and Associates' Reception Center
  
- 286 ADMINISTRATION
- 286 Administrative and Support Activities
- 289 Financial Management Activities
- 290 Smithsonian Institution Women's Council Activities
  
- 293 MEMBERSHIP AND DEVELOPMENT
- 293 Office of Development
- 293 National Board of the Smithsonian Associates
- 294 Women's Committee of the Smithsonian Associates
- 294 Smithsonian National Associate Program
- 302 Smithsonian Resident Associate Program
  
- 310 PUBLIC INFORMATION
- 310 Office of Public Affairs
  
- 313 JOHN F. KENNEDY CENTER FOR THE PERFORMING ARTS
  
- 331 WOODROW WILSON INTERNATIONAL CENTER FOR SCHOLARS
  
- 333 READING IS FUNDAMENTAL, INC.
  
- 336 SMITHSONIAN SCIENCE INFORMATION EXCHANGE, INC.
  
- 341 NATIONAL GALLERY OF ART
  
- 345 CHRONOLOGY
  
- 363 APPENDIXES



*Smithsonian Year • 1980*

---

STATEMENT BY THE SECRETARY





Exhibits are for everyone an exuberant and immediate means to the increase of knowledge. This costume band from New York City took part in the Caribbean Carnival parade of the annual Festival of American Folklife, presenting a show of imagination and wonder against the Castle background.



## *Exhibits Are for Everyone*

---

S. DILLON RIPLEY

AT THE RISK OF BEING ACCUSED of reckless hyperbole it seems fair to state that this past year has seen the most distinguished hegira of modern times, the miraculous reappearance of President Washington and his lady in Washington, D.C. The Washingtons have come to grace our midst for three years, he calm and assured, those eyes looking out and past one into the middle distance, as if the stability of the dollar bill could never be gainsaid, she rosy-cheeked and mob-capped, epitome of the mother figure all of us associate with reassurance.

From what I have been told Washington disliked Boston, or at least is alleged to have felt uncomfortable there, certainly in 1775. In that initial year of the war he found New Englanders as officers in the Army "generally speaking the most indifferent kind of people I ever saw." Washington was in Boston on only three occasions during his lifetime and yet by the ironies of fate, Mrs. Stuart's debts, and the necessity to sell her late husband's life sketches of the Washingtons, the President and his lady had been condemned to be on display in that alleged "Athens" since 1831, having been purchased for the Boston Athenaeum's collection of art from Mrs. Stuart. Gilbert Stuart was born in Rhode Island, and the most famous of his subjects, painted from life in Philadelphia, the father figure and his consort, were Virginians to the core. How strange it was to have their likenesses hung, forlornly, for so many years in the home of the bean and the cod. When I first saw the portraits there in my childhood at the Museum of Fine Arts, that temple of the visual and plastic arts, where they had hung already for two generations, in a corridor as I recall off the entrance foyer leading to the restrooms, portraits were infinitely less thought of as works of art and testaments of history than they are today.

In 1978 the Smithsonian was visited by a delegation of responsible trustees and lawyers of the two Boston institutions, the Athenaeum and the Museum of Fine Arts, with the suggestion that we should somehow purchase the portraits for our Johnny-come-lately National Portrait Gallery, born fifty years too late. The price seemed astronomical, but we were assured it represented fair market value for these unique documents, and this was probably true. How can one set a value on the Bill of Rights, or the manuscript of the Star-Spangled Banner? These paintings, done from life, are "pieces of the true cross," as one of the National Portrait Gallery commissioners was wont to declaim. There was no real doubt in anyone's mind that Washington City had somehow come of age, become sophisticated enough to be able to provide these great paintings with an appropriate setting. But how to afford them? We did not have five million dollars, nor could we arouse interest among our benefactors, the United States Congress; they did not feel that they could afford them for us either. Great philanthropists around the country were unenthusiastic. No one wanted to join in the responsibility of bringing the father of his country home to the town named for him. Besides, the District of Columbia being a political city in spite of its cultural establishment, there were those who aspired to place the Stuart portraits in the White House, feeling this setting would reflect better on the dignity of the sitters, as well perhaps as the *réclame* of the donors.

And so the Washingtons were in limbo for the moment. The need for money for endowments of the early library society, the Boston Athenaeum, was great—but no one stepped forward from the wings. At this juncture events occurred which might well have convinced the General that his thoughts about Boston were correct. An election was coming up, and local politicians, perhaps not art connoisseurs by admission, but certainly patriots all, sprang into the lists and declared that the Washingtons, "born and bred" as who could doubt in Massachusetts, must remain there once and for all. A committee to "Save Our Stuarts" was hastily set up, and all contact with the bureaucrats in the Smithsonian was eschewed. "How dare those Feds try to steal our jewels?" was the rallying cry. "Don't we pay taxes enough already?" chorused the politicians.

The Institution sat back decorously and gracefully—and waited. The final result delights us. We now legally *share* the wonderful



portraits with Boston's Museum of Fine Arts; each of us having raised approximately half the money for the Boston Athenaeum's requirements, we each can exhibit the Washingtons for a three-year period. Strangely enough, this concept of sharing unique works of art or history is still new, little endorsed by the great art or historical museums. Pride of possession is still too strong in the hearts of curators, acquirers all. But it was a grand acquirer himself, the sometime Metropolitan Museum of Art director, Thomas Hoving, whom I recall suggesting such a program, one with which I am heartily in accord. Solomon's choice, one might say. Nonsense! Sometimes works of unique importance should be shared, if not physically divided. There is too much parsimony in the world of unique objects as it is.

Finally the Smithsonian is delighted to have the Washingtons back near home, by an agreement reached when all the shouting and exhortations died away from the bunting-draped platforms whence they apparently emanated. The nation can only be the better for this exposure to great works, and benefit from the superior evidence which President and Mrs. Washington provide.

A community of interest should be ours in the sharing as well as the acquiring and exhibiting of works of art. It is to be hoped in the future that more museums will feel this way. Exhibits are for everyone and we have been fortunate to share the Washingtons, as we are fortunate to share exhibitions. Our success here is with the Smithsonian Institution Traveling Exhibition Service, the prime outreach service in the field of art and history exhibitions that the Institution can offer. This is a far more effective service for us to manage than the oft-repeated plea that we should manage entire museums in other states. We feel it is much more effective to mount exhibitions, with all the talent we can muster, and then launch them in company with colleagues across the land. The act creates mutuality of interest, is similarly educational for everyone including a vast and growing public, and accentuates part of our mandate for "increase and diffusion." The future is with us in the development of the traveling exhibitions.

The Smithsonian Institution Traveling Exhibition Service (SITES), founded in 1952, is now the largest and most diversified agency of its kind in the world. Up to one hundred and twenty different exhibitions have been circulated in one year in the United States and

several have gone abroad. These exhibitions reach over five million visitors to museums, libraries, universities, and other organizations whose programs would have been far less diversified and meaningful had it not been for the contributions made by SITES. During 1980, dozens of new exhibitions were introduced for circulation. Among the most important was the first thorough survey of the history of the French porcelain manufactory of Sèvres. This was accompanied by the first comprehensive catalogue in English describing the history and the production of that great porcelain center. *Western Views and Eastern Visions*, a collection of photographs mostly taken by members of the United States Geological Survey during the second half of the nineteenth century, and for the most part never exhibited before, gives an unvarnished view of the grand spectacle that our early explorers encountered as they were mapping this country. Another highly successful exhibition, drawn from the collection of the Hirshhorn Museum and Sculpture Garden, dealt with *Twentieth Century Sculptors and Their Drawings*.

SITES has ambitious plans to expand its foreign offerings and to develop the means to circulate an increasing number of our own exhibitions abroad. To find the means and techniques to do so efficiently will be one of the major tasks of SITES's new director, Peggy Loar. She comes to the Smithsonian from the Institute of Museum Services, where she was assistant director for program and policy. Miss Loar has broad museum experience and is well prepared to formulate programs responsible to the needs of SITES's constituency.

Like SITES whose exhibitions reach across the country and the world, the magazine *Smithsonian*, celebrating its tenth anniversary, reaches an ever-larger number of Associates here and abroad, nearing two million at this date. Our radio programs, notably *Galaxy*, now are heard by sixty million people per year around the world. The Institution's Press, operating in the black, has published a variety of excellent books, while Smithsonian Exposition Books, a publishing enterprise largely for Associates, has had a most successful season with a book on *The American Land*, and a history of presidential elections, titled *Every Four Years*, now in its second printing.

Exhibitions often associate themselves closely with performances or colloquia. The Einstein Centennial was a fortunate occasion to





A community of interest is ours in the sharing of works of art. During filming of *A Sense of Discovery*, produced by the Office of Telecommunications, conservators at NCFA restore an early American portrait. *Below.* Participants at the Edison Centennial Symposium in San Francisco view an installation of the SITES exhibition on *Edison and the Electrical Age: One Hundred Years.*



correlate a seminar at Princeton University with an exhibition at the National Museum of History and Technology. Exhibitions also include new acquisitions. The Smithsonian has been fortunate this past year in acquiring gifts in the field of modern art, notably the extremely important collection (part purchase with Regents Collections Acquisition funds, part gift from Vincent Melzac) of contemporary or recent painters including the Washington School, as well as seminal works by William de Kooning, Kenneth Noland, and Jules Olitsky.

In discussions of museum operations, a distinction is often made between research and exhibition—a distinction that is also enshrined in the language of federal budgets. Although in some ways it may be useful to make this distinction, the fact is that any good exhibition is necessarily both the product of research and a contribution to knowledge. In the case of art and science museums, where the evidence can be fully understood and appreciated only when it is physically before the viewer, exhibitions are in a real sense the most appropriate means of publishing the results of research. In a university, such museum exhibitions should qualify equally with books insofar as they may represent new discoveries of demonstrable theories of the professor-curator. This was a fact I was at pains to point out to faculty administrators during my work at Yale University, for too often such evidence of scholarly research tended to be overlooked. In art museums there is at least an exhibition catalogue published and distributed as tangible printed evidence of scholarly production. Curators among the scientific disciplines usually have less recourse to publications, however, and have sometimes been penalized through lack of comprehension by administrators of the original scholarship and character of exhibitions.

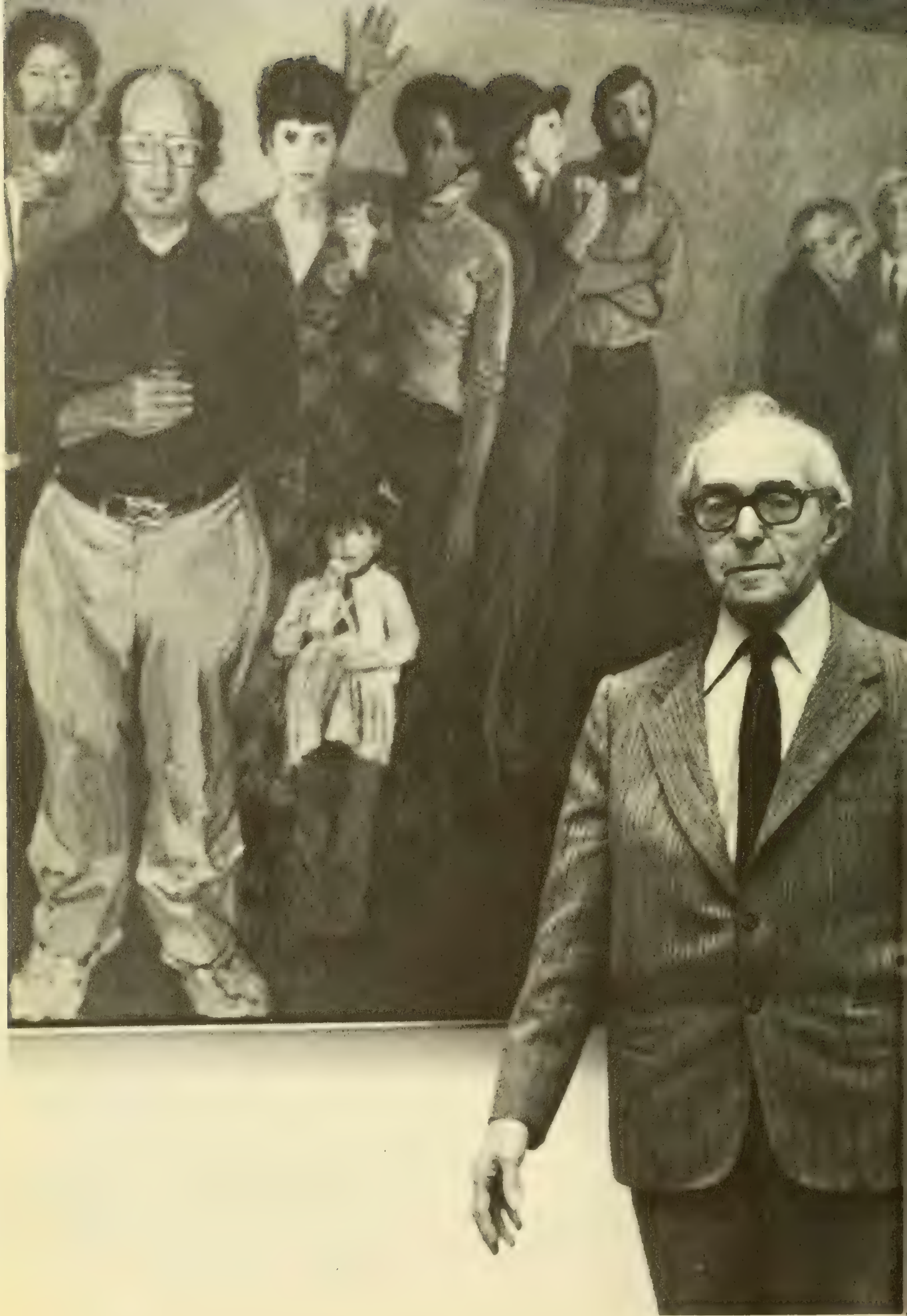
In recent years the art and history museums of the Smithsonian family have increasingly drawn upon their excellent scholarly staffs to create a growing number of exhibitions that have in this sense constituted important contributions to knowledge. While our museums have continued to show exhibitions organized elsewhere, and have added to the pleasure and education of our millions of visitors by doing so, we are particularly pleased to have been able to share with other museums more and more exhibitions conceived and organized within the Smithsonian. A sampling of ex-





A bird puppet from the Bambara people of Mali is admired by a young visitor to the Museum of African Art's 1980 summer exhibition on *Puppets from West Africa*.





Raphael Soyer, the dean of American realists, came to the Hirshhorn Museum and Sculpture Garden for his 80th birthday exhibition that opened at the museum on December 4, 1979. Here Soyer poses in front of his painting *Portraits at a Party*, a recent gift to the collection from Joseph H. Hirshhorn. The museum owns more of this artist's works—62 paintings and drawings—than any other institution.



hibitions of this sort indicates something of the range of our museums' contributions to this common enterprise of scholars and curators everywhere.

The Hirshhorn Museum and Sculpture Garden's important retrospective *Miró: Selected Paintings* was later seen at the Albright-Knox Art Gallery in Buffalo; Hirshhorn exhibitions of works by Botero and Edwin Dickinson traveled to Corpus Christi, Texas, and Louisville, Kentucky, respectively. An exhibition of oil sketches by Frederic Church from the collection of the Cooper-Hewitt Museum was organized by an outside curator, traveled to eight cities under the auspices of the Smithsonian Institution Traveling Exhibition Service, and was finally shown at the Cooper-Hewitt this year. The National Portrait Gallery's exhibition *Time of Our Lives*, consisting of selections from its collection of *Time* magazine cover portraits, was shown at the Lyndon B. Johnson Library in Austin. Three important exhibitions organized by the National Collection of Fine Arts were shared widely with museums elsewhere in this country and abroad: *Hugo Robus (1885–1964)* was seen at the Allentown Art Museum in Pennsylvania and the Columbus Museum of Art in Ohio; *Drawings of Morris Louis* traveled to the Fogg Art Museum, the Israel Museum, and the Tel Aviv Museum; *Across the Nation: Fine Art in Federal Buildings, 1972–79*, an exhibition of ninety-seven drawings and maquettes from the artist-in-architecture program of the General Services Administration will travel to the Hunter Museum of Art in Chattanooga and to four other cities. The Renwick Gallery's beautiful exhibition *The Harmonious Craft: American Musical Instruments* was shared with the American Craft Museum in New York City, the Kohler Arts Center in Sheboygan, Wisconsin, and Northwest Missouri State University. Finally, as the result of a very happy and fruitful international collaboration between Dr. Otto Mayr of our National Museum of History and Technology and the Bavarian National Museum in Munich, the very important exhibition *The Clockwork Universe: German Clocks and Automata 1550–1650* will be seen in both institutions. These are examples of the ways in which the museums of the Smithsonian have been able to use their own scholarly resources, and in many cases their own collections, for the benefit of scholars and museum visitors throughout the country and the world. We expect that this sharing will continue and increase in the years ahead.

In all these exhibitions, the Collections Acquisition funds provided by the Smithsonian Regents continue to play a significant role. As part of our trust funds budget allocated for the purpose, these sums, now only three years old, enable our museums to make important additions to collections. Thus the Hirshhorn Museum, in connection with the Miró retrospective exhibition, was able to acquire the painting *Woman before an Eclipse with Her Hair Disheveled by the Wind*, which was included in the show. Additional examples of such acquisitions are the collection of twelve Chinese calligraphy scrolls, exhibited so handsomely at the Freer Gallery of Art; the Gaston Lachaise sculpture *Standing Woman (Heroic Woman)* installed on the Hirshhorn Plaza; and those incomparable Gilbert Stuart portraits of George and Martha Washington, centerpieces now of the National Portrait Gallery's holdings.

The possession of such funds is a new development for the Institution, and makes possible, often with matching grants, the purchase of material formerly beyond the Smithsonian's reach. Similarly the importance of some of our collections, in fields like gems and gemstones, increasingly attracts major gifts.

This has been a significant year in terms of the outstanding research accomplishments with new facilities. For instance, latest reports indicate that the capabilities of the Multiple Mirror Telescope are exceeding our expectations. The site at the summit of Mt. Hopkins is turning out to be excellent for observation purposes and may be one of the very best such locations in the continental United States. The building is also exceeding our hopes in effectiveness. Modifications which we plan over the next few years should result in even sharper stellar images than are being obtained now (one-half arc second). Increasing the sharpness of the image is equivalent to increasing the diameter of the telescope by the same factor. Thus, these improvements are making available to American astronomers a telescope considerably more powerful than the 176-inch equivalent that had been anticipated originally.

At the Smithsonian Tropical Research Institute an important new facility at the Naos Marine Laboratory was opened by the president of Panama in July 1980. In this completely new aquatic system providing sea water for studies of captive marine organisms, salt water can be provided in raw, filtered, and sediment-free states, and the return flow can be sterilized so that organisms from



non-Pacific sources can be studied without risks of contamination. This facility will greatly enhance the research potential of our marine laboratory and should provide an important adjunct to any future sea-level canal studies, long a concern of the Smithsonian.

Our Marine Sciences Laboratory, located in the National Museum of Natural History / Museum of Man, has acquired its own research vessel and airplane, and this year the laboratory successfully conducted its first combined "sea and air" mission. The trip to the Caribbean focused on the study of coral reefs off the coasts of Haiti and the Virgin Islands. With the success of this expedition, plans are moving forward for the study of Pacific reefs using the same combination of ship and plane. Meanwhile the simulated living coral reef and lagoon with over two hundred species of animals and plants, materials garnered from these Caribbean studies, is now in place in a working laboratory exhibition in our National Museum of Natural History. This exhibition, designed by Dr. Walter Adey and planned with major support from the National Science Foundation, bids fair to becoming a major public education exhibition to be reproduced—with National Science Foundation help—in other museums across the country.

After over ten years of planning, countless meetings and studies, and numerous presentations to the Congress, one of the Institution's highest priorities is soon to be accomplished. Ground will be broken for the new Museum Support Center which will permit, at long last, the removal of vast portions of the collections of the National Museum of Natural History from inadequate facilities to a milieu where they can be properly conserved, easily retrieved and studied, and contained within laboratories equipped with the most up-to-date technology. Thus, a significant new door is about to open; while in the decades ahead the facility will no doubt have to be expanded, in the near term it can only be described as a quantum improvement.

It is irresponsible as well as unethical for museums to harvest collections only to let them gradually decay in ill-ventilated, overheated, and crowded storage areas. The proper housing of the collections of the National Museum of Natural History is a priority not only of the Institution but of the nation, for these collections in major part are unduplicated and are totally irreplaceable. In their aggregate, they represent a significant portion of the nation's,

indeed the world's, scholarly inheritance. It is with great satisfaction that I have presided over the achievement of this goal: I look forward to the dedication of the building, on schedule, toward the end of 1982. Thereafter, we plan to initiate a program of training in conservation to help alleviate the critical shortage of fully qualified conservators in America.

The Smithsonian Institution continued to search for ways to meet the high standards of excellence in its exhibitions, programs, and activities while significantly curtailing energy use wherever possible. More aggressive efforts which began in 1979 with the creation of a Smithsonian-wide energy conservation task force culminated this year in the establishment during June 1980 of a formalized Energy Management Program. The new energy policy establishes a plan for renovating inefficient utilities systems and for upgrading utilities operating procedures, expands an employee awareness program, and establishes a monitoring group in each museum and facility to ensure continued Institution-wide support and participation. Since fiscal year 1978, the Institution has avoided more than \$1.5 million in utilities costs, of which nearly \$600,000 was realized during the past year. This cost avoidance is attributed primarily to a computerized power management system and to improvements in the operation and maintenance of utilities distribution equipment. Among numerous additional energy conservation measures implemented this year, the Institution installed solar collectors on the new Great Ape House at the National Zoo, reduced lighting levels and modified exhibit and office lighting systems, altered selected staff work schedules to reduce lighting requirements and to avoid using powered tools and equipment during peak energy charge hours, and turned off "down" escalators and selected elevators on peak demand days. Other energy-saving measures begun during the year included the initiation of a study with the goal of creating energy-efficient environmental zones within Smithsonian buildings, testing of a new carburetor device to trim use of fuel in Smithsonian vehicles, and experimentation with gasohol.

Earlier in this account I have spoken of the "evidence" which the portraits of President and Mrs. Washington provide. I mean in this sense the *manifestation* that their appearance discloses. William Walton used the word in the title of his book, *The Evidence*





National Museum of Natural History volcanologist Dr. William Melson took this picture of Mount Saint Helens from the air shortly after it began to show signs of erupting. An apron of gray ash covers the snowy flanks of the mountain. *Below.* In response to public interest in the Mount Saint Helens eruption, scientists from NMNH organized a symposium on this fascinating national event. Answering public questions here are (left to right) NMNH director Richard Fiske, chief U.S. Geological Survey volcanologist Robert Tilling, and museum volcanologists William Melson, Thomas Simkin, Lindsay McClelland. (Photo by Chip Clark.)



of Washington (1966). Evidence is an aggregate of things, signs and symbols, past and present. It is not merely an exhibit, but the mood that it creates. In the artist's eye vision induces perspicuity, a seeing through. So it is with objects, objects collected by museums, objects from an attic or a bureau drawer. When my father died I opened the drawer, and there spread before me was the *materia vitae*, like a Harnett still life, the spectacles, a silver pencil for a waistcoat chain, collar buttons, a photo of a boy in the uniform of the Knickerbocker Grays, an old letter, and a diary.

If we did not build the Museum Support facility, where would our conscience be? If we did not collect objects, what evidence of truth would there be? Objects are a surer evidence than legal precedents, whose *evidence* Henry Clay questioned in one of his speeches in the Senate in 1835: "a solitary precedent . . . which has never been re-examined can not be conclusive." It is not so with objects, be they the jawbone of Balaam's ass, or the golden cup of Alexander of Macedon. Now that people read less, perhaps objects will return to their former status as evidence of truth, old testaments to revelation. Sometimes I have described museums, a bit facetiously, as the only legitimate growth industry (in a world of declining natural resources). It is true that in our present mode of life, in spite of the successes of the auction business, more and more people live under increasingly compressed physical conditions. Rooms are smaller, ceilings lower, attics like the trunk spaces of automobiles soon to be nonexistent. So, more and more, museums are being called upon as a last resort to winnow the chaff of possessions—and authentically curate the results. Museums live as they grow, presiding over the verities of history. I once quoted a Dr. Scott cited by the famous writer and philosopher, Cardinal Newman, as saying that "growth is the only evidence of life," a statement with a convincing biological ring. If one assumes this to be true, then museums and their careful curating have a far higher priority in life than public recognition or support gives them credit for.

In Washington today there exists a great paradox: life goes on but not much growth. One must eat and sleep and mind one's daily affairs, but the mood is numb. Too few people look at the dome of the Capitol or notice the soaring thrust of the Washington Monument, to sense the meaning and feel the past through mists,



like swirling clouds in time of war and pestilence, or the scourge of slavery, the past of unequal opportunity out of which, in pain, a Republic has arisen. Washington is not a symbol of inefficiency and pettifogging, but is rather in all our hearts, as in the eyes of the world, the emblem of democracy, a land where wounds are bound and hopes for future peace are established.

How can we recapture the past and find strength for the present? The two together promise hope and certainty for the future. I would venture that a walk along the nation's quadrangle, the National Mall, cathedral close of the Republic if you will, would provide a lesson in such feelings. Start at the Capitol, stand under Thomas Ustick Walter's great dome,<sup>1</sup> and then wander north and south to the adjacent original cubic spaces of Benjamin Latrobe. Stroll outside, down the lawn to the grand promenade, lined with our common history. Enter one or another of the buildings by your choice, and go on as far as you can, and if at the end, the result is not to produce in you a mood of assurance and confidence for the future, I would be surprised. For in this place there dwells a kind of reassurance, a reaffirmation of what we are about, the evidence of our purposes in being here at all.

In this connection, thinking of the past, it is worth pondering what we are doing about the present. What, for example, are we doing about that great preoccupation of today, the role of creative equal opportunity and affirmative action? Over the past year significant progress has been made in the Institution's equal employment opportunity and affirmative action programs. While roughly one-third of our work force is drawn from minority employees, and one-third are women, specific efforts are being made to improve their representation at the professional level. Similarly, we are seeking to afford more job opportunities to disabled persons. I am pleased to say that a variety of steps are being taken that in cumulative effect will result in a strengthened organization. Every job

---

<sup>1</sup> Perhaps our readers are not aware that the huge Capitol dome, symbol of stability, is alive? It moves. Joseph Henry, the first Secretary of the Smithsonian, conducted an experiment to determine the amount of movement of the top of the dome as a result of expansion from the heat of the sun in daytime, and nighttime contraction, and found that there was motion toward the cardinal points of the compass in twenty-four hours. The top oscillates each day between three and four inches, giving a nod, as it were, to the fifty states.

category in the Smithsonian has been analyzed to determine the composition of its employees. Areas of underrepresentation by women and minorities will receive particular attention. Recruitment efforts will reach out in a more positive way to seek all qualified candidates. A management review takes place on each tentative selection to ensure that all affirmative action requirements and needs have been realized.

A concurrent program includes the development of an expanded upward mobility series to provide employees the opportunity to improve their qualifications for career development and advancement. Whatever the ideal is in this respect, it continues to be a fact that qualified minority or women applicants may not be available for many of the Institution's jobs, especially in certain specialized scholarly and scientific disciplines that have little financial appeal in the job market. Consequently, we have inaugurated a cooperative education program that will allow approximately twelve graduate-level students to intersperse periods of work at the Institution with course work. Over time we hope to be able to recruit candidates who have completed this program to take on specialized professional careers. Other college and university intern programs at the undergraduate level are now being studied. We expect to make a greater effort to interest young people in pursuing our own types of academic work—now poorly promoted by university departments—that will qualify them for professional consideration by the Institution.

The present fashions in science training, particularly in biology, are all in the field of cellular research, biochemical- and biophysical-related, and in the burgeoning field of molecular studies. Connected to this is the continual pressure for many of the brightest students to be weaned away from the natural sciences into fields of medicine, as it has continued to be in the years since I was myself a university professor. And yet the need for studies in the long-neglected and quasi-unfashionable natural history fields becomes ever greater as the planet continues to suffer from over-exploitation and gradual degradation of living and inanimate resources. Ecologists are as much needed for the future of our health as are medical doctors in research. Still there continues to be a curious apathy and lack of understanding among teachers and the





Museums live as they grow, presiding over the verities of history. Youngsters stage a performance with stringed marionettes they constructed in a Young Associate class on marionette making, offered in conjunction with the *Belgium Today* international symposium. *Below.* NMHT's Division of Education served fifteen hundred senior citizens in its Senior Series this year. Age itself knows no limit to the joys of making and tasting the real thing: ice cream!



public alike, even as there is a lack of comprehension of the crisis in resources for energy. We toy with the issues of oil as we fiddle with the fate of our environment. It seems to be our mode to sing like the cricket the song of today and now, ever unable to think of the morrow. Natural history museums should be in the vanguard of support in ecological research for they contain many of the keys for understanding our future dilemmas. We continue to hope that the tide of fashion in biological and geological training will turn again to natural history studies in order to furnish recruits for these underestimated fields.

Training of our employees in the increasingly important and complex area of personnel matters has been intensified and broadened. Over the past year some one hundred supervisors and managers have taken a two-week course in personnel management and the development of supervisory skills. Altogether 275 persons with equal employment opportunity and affirmative action responsibilities took a two-day course to increase their knowledge and strengthen their ability to undertake such programs. We can only hope the intricacies of meeting the newly legislated requirements attendant on having a government-supported or appropriated budget will keep pace with the social achievements and benefits that we desire for all Americans. Many universities are at considerable financial disadvantage these days keeping the management supervision in order associated with federal or state support. Increasing oversight and administrative burdens are contemporary phenomena, often hard to associate with the work of education or the carrying forth of research. Time alone will tell us perhaps of the effectiveness of such proliferation of regulatory procedures, requiring expenditure of vast sums for the recovery of overhead costs.

This year, as in the past, we have witnessed a number of significant personnel changes in our senior staff. In January Michael Collins left the Institution's Under Secretaryship to pursue a career in private industry, but we were fortunate to find Phillip S. Hughes, long a friend of the Smithsonian, available to step in as our new Under Secretary. After more than twenty dedicated years of work at the Institution, Dorothy Rosenberg retired from service as my executive assistant, but only after we were able to present her with the richly deserved Secretary's Medal for Exceptional Service. Other retirements included Ted Rivinus from the director-



ship of the Smithsonian Institution Press and Ann Campbell from the directorship of the Management Analysis Office. Also off to other fields for their efforts were Laverne Love, Women's Program Coordinator, and Jake Page, columnist for *Smithsonian* magazine and founding director of Smithsonian Exposition Books. In each of the foregoing cases, as in so many others, we have lost a Smithsonian coworker but retained a colleague in the vital cultural pursuits of this nation.

We were particularly pleased to welcome the original and resourceful volcanologist Dick Fiske as the new director of the National Museum of Natural History / Museum of Man. We were also fortunate, as mentioned, in recruiting Peggy Loar as director of the Smithsonian Institution Traveling Exhibition Service. Additionally, we were delighted to appoint Felix Lowe as director of the Smithsonian Institution Press, Barbara Spraggins as director of the Special Events Office, and John Motheral as director of the Management Analysis Office, all of whom had served in important capacities on the Smithsonian staff. At our Exposition Books office, Glen Ruh succeeds Jake Page. Don Moser and Joe Bonsignore have taken over from Edward K. Thompson as managing editor and acting publisher respectively of the magazine, while Ralph Backlund has become executive editor, with Anne Keating and Tom Black as associate publishers. And it should be noted that Jim Hobbins similarly advanced in my office to become executive assistant.

Among the honors and awards received by members this year we should mention especially the recognition accorded to Steven Weinberg of the Smithsonian Astrophysical Observatory, member of the Smithsonian/Harvard Center for Astrophysics, named as a corecipient of the 1980 Nobel Prize for Physics.

It seems impossible to keep for ourselves all of our staff, and this past year we were especially grieved by the untimely deaths of Jeanette Gladstone and William Grayson. They were both among the most universally appreciated staff—extremely personable, interested, interesting, and bedrocks of Smithsonian life. They will both live long and bright in the memories of those of us who are inspired to take up where they have left off.

In the performance *in vivis* associated with the Institution we should give great credit to the presentation of the thirteenth Festival of American Folklife, held on the Mall from October third



On their first United States tour, the Royal Dancers and Musicians from the Kingdom of Bhutan (in the Himalayan Mountains north of India) performed in the Division of Performing Arts World Explorer Series at Baird Auditorium.

through eighth, and the Fourth of July festivities celebrated, in the words of John Adams, with “shews, games, sports, guns, bells, bonfires, and illuminations.” Other celebrations included the twentieth anniversary of the civil rights movement marked by a working conference and an exhibition as well as songs and music of the time. The production of records, music, and dance were on our agenda this past year, as well as a colloquium titled *The Muses Flee Hitler*, and a special ceremony participated in by other institutions and museums across the country and graced by the presence of the regal and dedicated King and Queen of the Belgians, Their Majesties, King Baudouin and Queen Fabiola.

So the Institution flourishes with exhibits, sound, publications, and distinguished collaborators and visitors of every ilk, the most varied, delightful, and—to paraphrase P. T. Barnum—biggest and best show on earth!





Secretary Ripley presented the James Smithson Medal to Pope John Paul II during the pontiff's historic visit to Washington and the Smithsonian in October 1979. The Smithson Medal is given to honor only the most outstanding achievements in art, science, education, or history. *Below.* King Baudouin and Queen Fabiola of Belgium view the Renwick Gallery exhibition of *Traditional Marionettes in French Belgium Today*. The Renwick typically shows special exhibitions on design and crafts.





The Renwick Gallery exhibition *Georg Jensen Silversmithy: 77 Artists, 75 Years* was viewed appreciatively by Mrs. Otto Borch, wife of the Danish ambassador, and Georg Jensen executives. *Below*. Twelve masterpieces of Chinese calligraphy were acquired by the Freer Gallery of Art through Smithsonian Collections Acquisition funds. At the opening of the exhibition at the Freer Gallery were Chai Zemin, ambassador of the People's Republic of China (*left*), shown with Chang Wenying, first secretary of the Culture Department.





## *Board of Regents*

---

THE BOARD OF REGENTS held three formal meetings during the last year as well as a number of additional meetings of the Executive Committee, the Investment Policy Committee, the Personnel Committee, and the Audit and Review Committee.

The board's first meeting of the year, on January 28, 1980, opened in the Regents' Room with a tribute to the late Regent John Nicholas Brown, who died October 9, 1979. A memorial was prepared in fine calligraphy for presentation to Mrs. Brown. To fill the vacancies on the board occasioned by Mr. Brown's untimely death and the resignation of Regent Thomas J. Watson, Jr., to become Ambassador to the Soviet Union, the Regents entertained the recommendations of their search committee and voted to nominate William G. Bowen and Carlisle H. Humelsine for statutory terms of six years each. These appointments were confirmed by joint resolutions of the Congress and signed into law by the president on March 13, 1980.

The Regents' Personnel Committee reported that no conflicts of interest were apparent in the confidential financial interests statements of the senior staff of the Institution. In addition, the Audit and Review Committee reported on its first meeting of the year which had consisted of an overview of the Smithsonian's organization, programs, funding, and staffing; a description of the independent auditing of trust funds, conducted this year by Coopers and Lybrand; and an outline of the work of the Institution's internal auditor.

The Treasurer provided an analysis of fiscal year 1979 results in the Institution's trust funds and reported the receipt of fiscal year 1980 federal appropriations. The financial reports included details on the allowance of the Office of Management and Budget and on the new programs highlighted in the fiscal year 1981 consolidated budget being submitted to Congress. In keeping with their bylaws, the Regents delegated certain authorities to the Secretary for the acceptance and transfer of specific kinds of gifts, grants, and bequests. The Investment Policy Committee reported that the Insti-

tution's investment managers had outperformed market averages over fifteen months prior to September 30, 1979. The Regents approved the Five-Year Prospectus (fiscal years 1981–1985) which had been updated to reflect the Regents' decisions on the fiscal year 1980 nonappropriated funds budget, allocation of the fiscal year 1980 federal budget, and fiscal year 1981 federal budget allowances from the Office of Management and Budget. New exhibition programs, equipment costs for the Museum Support Center, and planning funds for the Quadrangle project were highlighted.

The Secretary reported that the architectural/engineering firm of Shepley Bulfinch Richardson and Abbott had been selected to continue detailed planning to supplement Junzo Yoshimura's original concepts of the Quadrangle development. Mr. Ripley outlined planning expected to be accomplished with trust funds this year and summarized fund-raising efforts underway.

The Regents appointed five additional members to the Museum of African Art Commission: Messrs. Richard Long, Beverly Carter, Roy Sieber, Walter E. Washington, and Mrs. Katherine White. The Regents also approved the actions of the commissions of the National Collection of Fine Arts and the National Portrait Gallery and appointed the Honorable Robert B. Morgan and Mr. Thomas Mellon Evans to the latter commission. The Secretary was authorized to renew negotiations with the Boston Athenaeum for the purchase of the Gilbert Stuart portraits of George and Martha Washington. Subsequent to the meeting the chairman of the Executive Committee approved an agreement by which the Smithsonian would pay \$2,750,000, the Museum of Fine Arts, Boston, would pay \$2,125,000, and the Boston Athenaeum would lower the purchase price to \$4,875,000; the Smithsonian and the Museum of Fine Arts would be equal partners in ownership and would exhibit the portraits for equal time, alternating every three years; and the Smithsonian, after consultation, would have final authority and responsibility for conservation.

The Regents voted to present the Henry Medal to Gordon N. Ray for his distinguished leadership of the Smithsonian Council since 1970. The medal was presented on behalf of the Regents by the Secretary at the Regents' Dinner May 4, 1980, where Dr. Ray spoke briefly about the history and significance of the council since its founding.



The Secretary presented a report of the work in popular book publishing accomplished by Smithsonian Exposition Books and the Regents approved the publication of *Every Four Years . . . The American Presidency*. The Secretary also discussed the status of the Museum Support Center, the Mall Parking Study, and the Equal Opportunity Program, which subject, together with the future of the Belmont Conference Center property, was referred to the Audit and Review Committee for examination. Additional reports were received on the impact of the Panama Canal Treaty implementing legislation on the Smithsonian Tropical Research Institute; Civil Service reform; major construction projects; the status of the Smithsonian Science Information Exchange; litigation; legislation; the return of museum objects to the Hillwood Museum; the appointment of Dr. Fiske as Director of the National Museum of Natural History / Museum of Man; the Smithsonian delegation's trip to China. The Regents were also provided an updated report, "Survey of Smithsonian Institution Property."

At the second meeting of the Board of Regents, held in the Regents' Room on May 5, 1980, the Executive Committee reported on its meeting of April 2 and made recommendations to the Regents on the agenda papers. Three Regents' terms were scheduled to expire on August 30, 1980, and it was learned that Dr. Gell-Mann and Mr. Burden would be reappointed (the joint resolutions of the Congress were subsequently signed into law by the president on July 25, 1980) while Dr. Haskins would not seek reappointment. The Chancellor asked the Executive Committee to serve as the search committee to seek a replacement, and the Regents elected Mr. Humelsine to serve on the Executive Committee succeeding Dr. Haskins effective September 1, 1980.

The Audit and Review Committee reported on its meetings of February 28 and May 3, 1980. The Committee's agenda included a discussion with Coopers and Lybrand on their independent audit of trust funds for fiscal year 1979, and reviews of the Institution's inventory of collections, the process of budgeting unrestricted trust funds, the status of the Belmont Conference Center, and the Smithsonian's equal opportunity program. On the recommendation of the committee, it was voted "that the Board of Regents lends its full support to the Institution's intensified efforts and encourages and directs the management of the Institution to take all

possible steps to ensure equal opportunity within the Smithsonian. . . ."

The title of Regent Emeritus had been conferred on only one former Regent, the Honorable George H. Mahon, in January 1979. Upon the recommendation of the Executive Committee, the Regents voted to confer the title on twelve former Regents whose interests in and value to the Smithsonian and the Regents promise to continue: Dr. Jerome C. Hunsaker, 1949–1968; Dr. Crawford H. Greenewalt, 1956–1974; Honorable J. William Fulbright, 1959–1974; Honorable Hugh Scott, 1967–1976; Honorable Thomas J. Watson, Jr., 1969–1979; Honorable Robert F. Goheen, 1972–1977; Honorable William E. Minshall, 1973–1975; Honorable Sidney R. Yates, 1975–1976; Honorable Frank E. Moss, 1975–1977; Honorable Elford A. Cederberg, 1975–1978; Honorable Claiborne Pell, 1977–1978; Honorable Corinne C. Boggs, 1977–1978.

The Treasurer reported on the status of appropriated and non-appropriated funds for fiscal year 1980, noting particularly governmentwide budget reductions and revised projections for the unrestricted trust funds. It was noted that the Office of Management and Budget reduced the Institution's appropriation request for fiscal year 1981, then pending before Congress. The Investment Policy Committee reported on the performance of the investment managers and considered favorably the possible funding of the Quadrangle underground parking facility from funds to be transferred in future years to unrestricted endowment funds, as a self-liquidating investment, albeit of modest return.

The Regents discussed two recent legislative actions which departed from the tradition of reserving the use of the word "national," when applied to museums, to elements of the Smithsonian. Strategies were discussed for reaffirming the traditional use of "national" in the Smithsonian context.

The Secretary reviewed refinements in the design of the Quadrangle and noted that it has been generally well received by the National Capital Planning Commission. He added that an environmental impact statement and a revised report on program and space requirements are being prepared. Receiving a report on the status of fund-raising efforts, the Regents discussed a tentative financial plan which suggests as many as five sources of support: unrestricted nonappropriated trust funds netted from auxiliary





This unusual portrait, donated recently to the National Portrait Gallery by Paul Mellon, depicts the American financier and minister to the Netherlands (1853–57) August Belmont. Renowned as a sportsman as well as a man of business and diplomacy, Belmont here has taken the reins and appears to be enjoying himself in a scene rendered by the Dutch artist Wouterus Verschuur in 1854.

activities; future parking revenues; proceeds from the sale of Museum of African Art real estate; contributions through fund-raising efforts; and federal appropriations.

The Secretary presented reports on the Museum Support Center, including the status of design, hearings, and the conclusion—after considerable study—to seek appropriations for an innovative three-tiered, self-supporting storage system. Progress was noted in the inventories of collections in the National Museum of Natural History / National Museum of Man and the National Museum of History and Technology.

The board accepted the annual report for fiscal year 1979, re-appointed Mr. Andrew Oliver to the Commission of the National Portrait Gallery, and endorsed the Executive Committee's and the Secretary's recommendation to the president that General Andrew J. Goodpaster and Professor Theodore Ropp be appointed to the National Armed Forces Museum Advisory Board (which appointments were made by President Carter on June 6, 1980). The Regents voted to award the Hodgkins Medal and Prize to Dr. Luigi Jacchia, physicist at the Smithsonian Astrophysical Observatory, "in recognition of his pioneering work in atmospheric physics which has led to an understanding of the earth's upper atmosphere and its bearing on the welfare of man."

The Regents received reports on the special Collections Acquisition Program begun by the Regents with nonappropriated trust funds in January 1978. Attention was drawn to the acquisitions under this program, the funds generated by provisions for matching funds, and the condition of the present acquisition funds. Additional status reports were prepared on popular book publishing, the Mall parking study, construction projects, litigation, legislation, and the Smithsonian Science Information Exchange.

At the Regents' Dinner, held Sunday evening, May 4, in the courtyard of the Fine Arts and Portrait Gallery Building, the Regents were treated to a glimpse of the newly arrived Gilbert Stuart portraits of George and Martha Washington. On behalf of the Regents, the Chancellor presented to Mrs. Ripley a necklace with a pendant of polished smithsonite mounted on a Smithsonian sunburst medallion, and a citation which read in part: "The Regents of the Smithsonian Institution note with admiration the many contributions with which Mary Livingston Ripley has advanced the



purposes of the Institution as well as the scientific activities of her husband, the Eighth Secretary. . . ." Her many contributions have covered the fields of voluntary organizations, the stimulation of horticulture at the Institution, and valuable collections of entomology and photographs from the field.

The fall meeting of the Board of Regents was called to order in the Regents' Room on September 22, 1980. The Executive Committee reported on its August 19 meeting to which all Regents had been invited because of the importance of reviewing the fiscal year 1982 budget materials before their submission to the Office of Management and Budget.

Acting on behalf of the Board of Regents, the Executive Committee asked the congressional members of the board to introduce and support legislation to change the names of the National Collection of Fine Arts and the National Museum of History and Technology to the National Museum of American Art and the National Museum of American History respectively. Serving as a search committee to find a replacement for Dr. Haskins, the Executive Committee recommended Mr. David C. Acheson to serve as the next Regent from the District of Columbia. The board voted to ask its congressional members to introduce legislation to that effect.

Special note was taken of the extraordinary services which Dr. Haskins had rendered to the Smithsonian over the course of his four terms, or twenty-four years, not only as a Regent but as a most distinguished scientist. The Regents resolved to present to Dr. Haskins the Henry Medal in recognition of his manifold contributions to the Smithsonian. Knowing of his continuing interests in the work of the Smithsonian Tropical Research Institute, the Smithsonian Astrophysical Observatory, and the Department of Entomology in the National Museum of Natural History, the Regents also voted to confer the title of Regent Emeritus on Dr. Haskins.

On the recommendation of the Executive Committee the bylaws of the Board of Regents were amended to include the category of Regent Emeritus for former Regents who accept responsibilities for continuing activities in the interests of the Smithsonian. The title is to be conferred by resolution of the board.

The Treasurer's financial report included status reports on fiscal year 1980 federally appropriated and nonappropriated funds and

on the fiscal year 1981 budget, reflecting actions taken by the Office of Management and Budget and the House of Representatives on the original request for appropriations. The Regents voted to approve the revised budgets of appropriated and nonappropriated funds for fiscal year 1981 and authorized the Secretary to expend the funds accordingly. The board also approved the submission of the fiscal year 1982 budget to the Office of Management and Budget together with projections for fiscal year 1982 nonappropriated funds.

The Investment Policy Committee presented an account of the total market value of the Smithsonian endowment funds and observed that during the last quarter the investment managers performed in line with or ahead of market averages. The Audit and Review Committee reported on its September 16 meeting in which the committee discussed progress on the current audit with Coopers and Lybrand, reviewed the Institution's operations and controls in the auxiliary activities, and discussed the legal liabilities of the Regents with respect to their responsibilities.

The Secretary noted that work continues on the design refinements and the environmental impact statements for the Quadrangle, and he presented a schedule of hearings for the project before the several cognizant commissions in the coming year. There followed a synopsis of fund-raising activities to date in the Orient, the Middle East, and among United States corporations. The Regents voted to request the congressional members of the board to introduce and support legislation authorizing construction of the Quadrangle.

Earlier it had been noted that the current procedures for the acquisition and disposition of works of art for the National Collection of Fine Arts and the National Portrait Gallery were unwieldy, and therefore the Regents voted to delegate such authority to the Secretary, consistent with the policies of the Board. The Regents also requested the commissions of the National Collection of Fine Arts and the National Portrait Gallery to submit revised bylaws to the Regents at the January 1981 meeting. At the suggestion of the Secretary, the Regents resolved to name the theater in the National Air and Space Museum in honor of Samuel Pierpont Langley, the third Secretary of the Smithsonian, astrophysicist, and aeronautical pioneer. The Regents also voted to



authorize the Secretary to negotiate for the purchase of approximately twenty acres adjacent to properties held at the Chesapeake Bay Center for Environmental Studies.

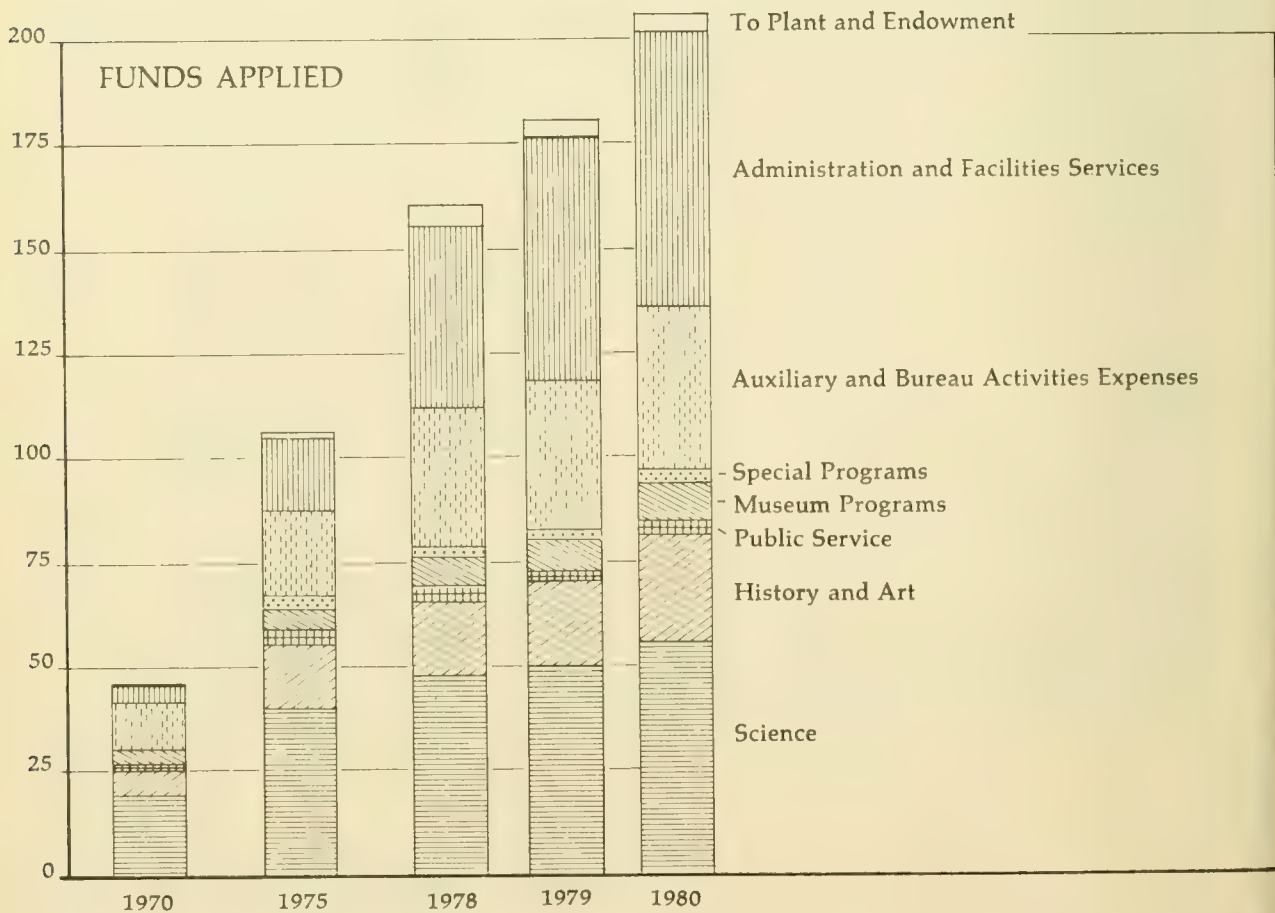
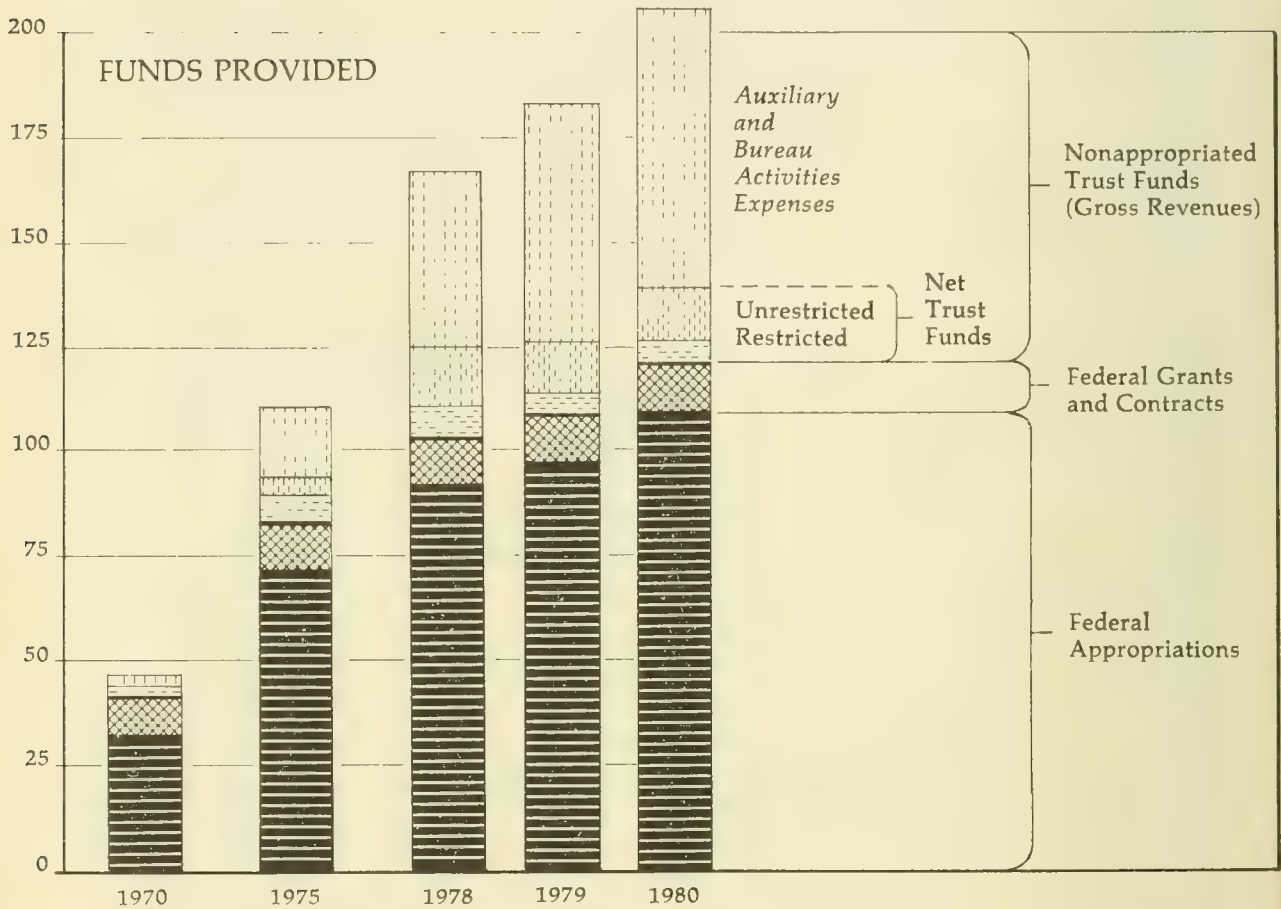
The Secretary submitted a report on the status of the Museum Support Center on which construction is expected to begin in early 1981. The Secretary also reported on changes anticipated in the popular book publishing program following a thorough review by a special panel of Smithsonian Council members, outside publishers, and Smithsonian staff. A new policy on the use of Smithsonian facilities (Office Memorandum 724) was brought to the Regents' attention, as was a report on Smithsonian arrangements for conducting research in foreign nations. The Secretary highlighted the planned implementation of noncapital intensive recommendations from the completed study for visitors' access to the Mall museums. The Regents also received for comment a draft of the revised Five-year Prospectus for fiscal years 1982-86. Other reports furnished in advance concerned major construction projects, the equal employment opportunity program, legislation, litigation, the Smithsonian Science Information Exchange, the Smithsonian Tropical Research Institute, and the National Armed Forces Museum Advisory Board.

The Regents' Dinner was held at the Supreme Court on Sunday evening, September 21, 1980, at the invitation of the Chancellor and Mrs. Burger. The dinner was in honor of Dr. Haskins, who was presented the Henry Medal by the Chancellor. The Secretary presented the Hodgkins Medal and Prize to Dr. Jacchia of the Smithsonian Astrophysical Observatory.

# SMITHSONIAN INSTITUTION OPERATING FUNDS

Fiscal Years 1970, 1975, and 1978–1980

(In \$1,000,000's)





## FINANCIAL REPORT

CHRISTIAN C. HOHENLOHE, TREASURER

**SUMMARY:** During fiscal year 1980 the Smithsonian received strong financial support from the Congress, from donors, from granting agencies, and from revenue-generating auxiliary activities. This mix of funding from public and private sources, from gifts and earned income, permitted notable progress and accomplishments in research, exhibits, publications, and public education. Growth in the overall budget of the Institution in fiscal year 1980 and prior years may be seen in the bar chart on the facing page which displays the source and application by broad category of operating funds. In the context of unusually high inflation, however, this growth was mainly illusory; the larger part of the increased budget was necessarily devoted to keeping up with the higher costs of salaries and supplies, of utilities and collection purchases, with the balance limited to selected high-priority concerns of the Institution. The full-time staff of the Smithsonian grew less than 3 percent over the year, and the increase was almost exclusively in personnel for administrative and facilities services, for auxiliary activities, and for short-term research projects.

In a time of difficulty for most cultural and research organizations, the continued generous support of the Congress was greatly appreciated. The overall federal appropriations, which totaled over \$144 million, provided core support for basic research, exhibition, and education programs; for acquisition, care, documentation, and study of the national collections; and for construction, maintenance, restoration, and protection of Smithsonian facilities. Beyond offsetting the major portion of uncontrollable cost increases, appropriations for operating purposes gave significant new funding for the Museum of African Art, for collections inventory

and management, and for administrative offices. The Museum Support Center, for which \$20.6 million of construction funding was appropriated, will be of immeasurable benefit to the Smithsonian in carrying out its responsibilities of caring for the national collections for future generations. Also of great importance were construction funds to allow forward progress on the facilities development for the National Zoological Park, as well as moneys for the less visible but necessary repairs and renovations of other Smithsonian buildings.

Favorable public support for the Institution also continued, as evidenced by the success of the ongoing Smithsonian Associate programs and other educational auxiliary activities, as well as gifts and grants from individuals and foundations. These revenues allow the Institution to fund a significant portion of its programs from nonappropriated sources, extending the reach of the research and education activities beyond what is supported with federal appropriations. Net revenues from nonappropriated sources, after deduction of operating expenses and cost of sales of auxiliary activities, increased slightly over last year. This was sufficient to continue ongoing programs such as the Regents Collections Acquisition, Scholarly Studies, and Educational Outreach programs, operating allotments to numerous bureaux, and reserves for construction and land acquisition. The major collection purchase of the year was, of course, the acquisition of the Gilbert Stuart portraits of George and Martha Washington. Increasing the endowment funds is a high priority of the Institution, in order to maintain the balance of appropriated and nonappropriated funds which has been a source of strength in meeting goals and seizing new opportunities. The Regents, therefore, followed the practice of recent years and authorized transfer of some \$2 million of unrestricted trust funds into endowment, as well as a further \$650,000 of National Air and Space Museum current funds into a fellowship endowment.

Measured progress continued this year in obtaining funds for the Quadrangle, the site of a future center for Eastern art as well as the new home for the Museum of African Art, south of the Smithsonian Castle; a gift of \$1 million was received for the project from the government of Japan, and indications of further gifts from other sources were favorable. The Quadrangle will be com-



(In \$1,000's)

	FY 1978	FY 1979	FY 1980
<b>INSTITUTIONAL OPERATING FUNDS</b>			
<b>FUNDS PROVIDED:</b>			
Federal Appropriations—Salaries & Expenses .....	\$ 93,393	\$ 98,202	\$107,764
Federal Agency Grants & Contracts .....	11,157	11,412	12,947
<b>Nonappropriated Trust Funds:</b>			
For Restricted Purposes .....	6,538	4,577	5,339
<b>For Unrestricted &amp; Special Purposes:</b>			
Auxiliary & Bureau Activities Revenues—Gross .....	55,189	67,360	75,150
Less Related Expenses .....	(43,070)	(57,557)	(65,933)
Auxiliary & Bureau Activities Net Revenue ....	12,119	9,803	9,217
Investment, Gift, and Other Income .....	2,241	3,394	3,825
Total Net Unrest. & Special Purpose Revenue ..	14,360	13,197	13,042
Total Nonappropriated Trust Funds*—Gross ....	63,968	75,331	84,314
—Net .....	20,898	17,774	18,381
Total Operating Funds Provided—Gross .....	168,518	184,945	205,025
—Net .....	\$125,448	\$127,388	\$139,092
<b>FUNDS APPLIED:</b>			
Science .....	\$ 50,396	\$ 53,002	\$ 57,907
Less SAO Overhead Recovery .....	(1,841)	(1,850)	(2,196)
History & Art .....	19,105	20,245	26,224
Public Service .....	2,799	2,927	3,129
Museum Programs .....	7,454	8,003	8,974
Special Programs .....	1,981	2,692	3,204
Associates and Business Management .....	244	304	345
Administration—Federal** .....	6,346	7,071	8,048
—Nonappropriated Trust Funds .....	3,795	4,134	4,937
Less Smithsonian Overhead Recovery .....	(3,359)	(4,038)	(4,379)
Facilities Services .....	25,985	27,790	30,630
Total Operating Funds Applied .....	112,905	120,280	136,823
<b>Transfers (Nonappropriated Trust Funds)</b>			
Unrestricted Funds—To Plant .....	869	1,857	1,342
—To Endowments .....	3,271	2,671	2,031
Restricted Funds—To Endowments .....	1,261	413	757
Total Operating Funds Applied & Transferred Out	\$118,306	\$125,221	\$140,953
<b>CHANGES IN NONAPPROPRIATED TRUST FUND BALANCES:</b>			
Restricted Purpose (Incl. Fed. Agency Gr. & Cont.)	\$ 980	\$ 171	\$ (225)
Unrestricted—General Purpose .....	850	33	36
—Special Purpose .....	5,312	1,963	(1,672)
Total .....	\$ 7,142	\$ 2,167	\$ (1,861)
<b>YEAR-END BALANCES—NONAPPROPRIATED TRUST FUNDS:</b>			
Restricted Purpose .....	\$ 4,540	\$ 4,900	\$ 4,675
Unrestricted—General Purpose .....	4,932	4,965	5,001
—Special Purpose .....	9,604	11,567	9,895
Total .....	\$ 19,076	\$ 21,432	\$ 19,571
<b>OTHER FEDERAL APPROPRIATIONS</b>			
Smithsonian Science Information Exchange .....	\$ 1,857	\$ 2,063	\$ —
Special Foreign Currency Program .....	4,000	3,700	4,200
Construction .....	5,250	6,575	32,100
Total Federal Appropriations (Incl. S&E above) ..	\$104,500	\$110,540	\$144,064

\* Figures do not include gifts and other income directly to Plant and Endowment Funds:  
FY 1978—\$185,000; FY 1979—\$96,000; FY 1980—\$1,211,000.

\*\* Includes unobligated funds returned to Treasury: FY 1978—\$112,000; FY 1979—\$47,000; FY 1980—\$267,000.

pleted only with strong financial support from private contributions, self-generated funds from auxiliary activities, and appropriated funds; efforts to secure this support will continue in earnest.

### *Operating Funds—Sources and Application*

The growth in past years of the Institution's overall operating budget has continued in fiscal year 1980, as may be seen in both Table 1 and the bar chart at the head of this section. Total gross operating funds grew from \$184,945,000 in fiscal year 1979, to \$205,025,000 in fiscal year 1980, an increase of \$20,080,000, or 11 percent. Federal appropriations constitute 53 percent of total gross operating funds provided, federal agency grants and contracts 6 percent, and nonappropriated funds 41 percent, the same ratios as last year.

After deducting the expenses of the nonappropriated fund auxiliary and bureau activities, the growth in net operating funds was 9 percent over fiscal year 1979. This increase in net funds of \$11,704,000 was primarily in federal appropriations (\$9,562,000) and federal agency grants and contracts (\$1,535,000). Net operating funds, supporting the wide range of Smithsonian programs and activities, are derived 78 percent from federal appropriations, 9 percent from federal agency grants and contracts, and 13 percent from nonappropriated sources. Application of these moneys by all Smithsonian bureaux is set forth in Table 2, with further supporting detail in other tables.

#### *FEDERAL APPROPRIATION*

Federal funds totaling \$107,764,000, an increase of approximately \$9.6 million over fiscal year 1979, were provided to the Institution for operating purposes. As in the past several years, a major portion of this increase was directed to generally uncontrollable items. Inflation in the areas of salaries and utilities accounted for some \$6.9 million of the increase, while an additional \$500,000 was required to fund the first full year of operating costs for the Museum of African Art. The balance of \$2.2 million was applied to a variety of program requirements. Collections management, a high priority



of the Institution, received additional funding of over \$1 million to support collections inventory, storage, and conservation in bureaux throughout the Institution, furthering efforts to gain more effective inventory control over the collections and to conserve the valuable objects and specimens. A second area of emphasis was the strengthening of administrative capabilities, particularly in the areas of facilities planning and personnel management. In the first instance the growth reflected increased focus by the Institution on maintaining and preserving its physical plant, while in the latter, the growth was needed to meet new requirements created by both the Civil Service Reform Act of 1978 and the Panama Canal Treaty. Implementation of this treaty also necessitated major new funding for the Tropical Research Institute for personnel benefits and security needs. Finally, increased support was provided for exhibit protection and various other priorities of the Institution. For seven months of fiscal year 1980 the Institution was subject to a hiring limitation imposed by the president of the United States; resultant savings in personnel costs and cuts in other expenses were applied towards a \$550,000 deficit in utilities funding created by price increases that were beyond the Institution's control.

#### *FEDERAL AGENCY GRANTS AND CONTRACTS*

A major source of support, particularly for the Institution's research activities, is federal agency grants and contracts (including subcontracts from organizations receiving federal prime funding). The funding agencies for the awards, which in fiscal year 1980 accounted for 9 percent of net operating revenue, or approximately \$13 million, are summarized in Table 3. As may be seen from this table, the majority of these funds was from the National Aeronautics and Space Administration (NASA), primarily for the Smithsonian Astrophysical Observatory (SAO) which, as in past years, received substantially more grant support than other Smithsonian bureaux. NASA grants supported important space science projects in high-energy astrophysics and radio/geoastronomy, including preparation of instruments for the Space Shuttle program. SAO also received significant funding from the National Science Foundation and the Department of Defense, as did the National Museum of Natural History for operations of the Oceanographic Sorting Center and for continuation of the Medical Entomology Project. Other

TABLE 2. *Source and Application of Operating Funds*  
*Year Ended September 30, 1980*  
 (Excludes Special Foreign Currency Funds, Plant Funds, and Endowments)  
 (In \$1,000's)

Funds	Nonfederal Funds						
	Fed- eral funds	Total non- federal funds	Unrestricted			Restricted	
			Gen- eral	Aux- iliary activ- ities	Spe- cial pur- pose	Gen- eral	Grants and con- tracts
FUND BALANCES 10/1/79 ..	\$ —	\$ 21,432	\$4,965	\$ —	\$11,567	\$ 4,864	\$ 36
FUNDS PROVIDED							
Federal Appropriations .....	107,764	—	—	—	—	—	—
Investment Income .....	—	5,249	2,470	—	430	2,349	—
Grants and Contracts .....	—	12,947	—	—	—	—	12,947
Gifts .....	—	3,226	14	898	57	2,257	—
Sales and Revenue .....	—	74,252	—	72,203	2,049	—	—
Other .....	—	1,587	140	—	714	733	—
Total Provided .....	107,764	97,261	2,624	73,101	3,250	5,339	12,947
Total Available .....	\$107,764	\$118,693	\$7,589	\$73,101	\$14,817	\$10,203	\$12,983
FUNDS APPLIED							
<i>Science:</i>							
Assistant Secretary .....	\$ 301	\$ 346	\$ 78	\$ —	\$ 1	\$ 94	\$ 173
Natl. Mus. of Nat. History ..	14,657	2,351	78	—	624	479	1,170
Astrophysical Observatory ..	5,028	13,409	2,217	—	433	123	10,636
Less Overhead Recovery ..	—	(2,196)	(2,196)	—	—	—	—
Tropical Research Inst. ....	2,257	255	54	—	151	50	—
Radiation Biology Lab. ....	1,837	208	—	—	89	22	97
Natl. Air & Space Museum ..	5,597	1,615	19	—	1,274	251	71
Chesapeake Bay Center ....	744	587	137	—	106	112	232
Natl. Zoological Park .....	8,521	310	38	—	152	24	96
Center for Study of Man ....	575	33	2	—	—	11	20
Fort Pierce Bureau .....	—	366	—	—	—	366	—
Total Science .....	39,517	17,284	427	—	2,830	1,532	12,495
<i>History and Art:</i>							
Assistant Secretary .....	317	96	77	—	12	1	6
Natl. Mus. of Hist. & Tech. ..	7,177	735	148	—	221	366	—
Natl. Coll. of Fine Arts .....	3,371	1,241	53	—	953	230	5
Natl. Portrait Gallery .....	2,442	2,953	31	—	2,781	139	2
Hirshhorn Museum .....	2,200	209	23	—	49	137	—
Freer Gallery of Art .....	656	1,427	10	—	367	1,050	—
Archives of American Art ...	521	471	1	—	6	464	—
Cooper-Hewitt Museum .....	629	1,502	329	—	636	482	55
Museum of African Art .....	543	366	7	—	190	134	35
Total History and Art..	17,856	9,000	679	—	5,215	3,003	103
<i>Public Service:</i>							
Assistant Secretary .....	246	299	262	—	36	1	—
Reception Center .....	16	315	314	—	1	—	—
Anacostia Museum .....	567	40	22	—	17	1	—
Intl. Exchange Service .....	323	—	—	—	—	—	—
Performing Arts .....	331	3,667	21	3,521	96	—	29
Smithsonian Press .....	819	1,906	—	1,879	2	25	—
Exposition Books .....	—	4,041	—	4,041	—	—	—
Total Public Service ...	2,302	10,268	619	9,441	152	27	29



TABLE 2. *Source and Application of Operating Funds—continued*  
*Year Ended September 30, 1980*

(Excludes Special Foreign Currency Funds, Plant Funds, and Endowments)  
(In \$1,000's)

Funds	Nonfederal Funds						
	Fed- eral funds	Total non- federal funds	Unrestricted			Restricted	
			Gen- eral	Aux- iliary activ- ities	Spe- cial pur- pose	Gen- eral	Grants and con- tracts
<i>Museum Programs:</i>							
Assistant Secretary .....	2,351	249	21	—	95	79	54
Registrar .....	115	—	—	—	—	—	—
Conserv. Analytical Lab. ....	654	—	—	—	—	—	—
Libraries .....	2,730	266	214	—	—	52	—
Exhibits .....	1,259	5	—	—	5	—	—
Traveling Exhib. Service .....	161	1,091	—	1,027	30	9	25
Archives .....	367	43	42	—	1	—	—
National Museum Act .....	794	—	—	—	—	—	—
Total Museum Programs	8,431	1,654	277	1,027	131	140	79
<i>Special Programs:</i>							
Am. Studies & Folklife Pgm. . .	447	561	405	—	54	—	102
Intl. Environmental Pgm. ....	408	—	—	—	—	—	—
Academic & Educational Pgm.	478	758	131	—	586	38	3
Collections Mgt./Inventory ...	543	—	—	—	—	—	—
Total Special Programs .	1,876	1,319	536	—	640	38	105
Associate Programs .....	—	39,038	282	38,677	23	15	41
Business Management .....	—	14,616	—	14,616	—	—	—
Administration .....	7,781	5,296	4,716	359	90	101	30
Less Overhead Recovery .....	—	(4,379)	(4,379)	—	—	—	—
Facilities Services .....	29,734	896	803	—	93	—	—
<i>Transfers Out/(In):</i>							
Treasury .....	267*	—	—	—	—	—	—
Coll. Acq., Schol. St., Outrch.	—	—	2,000	—	(2,000)	—	—
Liability Reserves .....	—	—	700	—	(700)	—	—
Net Auxiliary Activities .....	—	—	(8,600)	8,600	—	—	—
Other Designated Purposes ...	—	—	1,226	381	(1,623)	16	—
Plant .....	—	1,342	1,281	—	61	—	—
Endowment .....	—	2,788	2,021	—	10	757	—
Total Transfers .....	267	4,130	(1,372)	8,981	(4,252)	773	—
Total Funds Applied ...	\$107,764	\$99,122	\$ 2,588	\$73,101	\$ 4,922	\$ 5,629	\$12,882
FUND BALANCES 9/30/80 .. \$	—0—	\$19,571	\$ 5,001	\$ —0—	\$ 9,895	\$ 4,574	\$ 101

\* Unobligated funds returned to Treasury.

TABLE 3. *Grants and Contracts—Expenditures*  
(In \$1,000's)

<i>Federal Agencies</i>	<i>FY 1978</i>	<i>FY 1979</i>	<i>FY 1980</i>
Department of Defense .....	\$ 968	\$ 1,079	\$ 1,078
Department of Energy .....	266	304	340
Department of Health and Human Services.	311	288	280
Department of Interior .....	4	65	197
Environmental Protection Agency .....	422	31	—
National Aeronautics and Space Administration* .....	7,858	8,919	9,832
National Endowments for the Arts and Humanities .....	226	105	118
National Science Foundation** .....	400	385	651
Other .....	632	314	386
Total .....	<u>\$11,087</u>	<u>\$11,490</u>	<u>\$12,882</u>

\* Includes \$534,000 (FY 1978), \$583,000 (FY 1979), and \$554,000 (FY 1980) in subcontracts from other organizations receiving prime contract funding from NASA.

\*\* Includes \$137,000 (FY 1980) in NSF subcontracts from the Chesapeake Research Consortium.

Smithsonian units receiving research support included the Chesapeake Bay Center for Environmental Studies, the Radiation Biology Laboratory, the National Zoological Park, and the Office of Folk-life Programs.

#### NONAPPROPRIATED TRUST FUNDS

The Institution received a wide range of funding from nonfederal sources for a variety of purposes. These nonappropriated trust fund revenues totaled \$84,314,000 in the aggregate in fiscal year 1980, an increase of almost \$9 million, or 12 percent over fiscal year 1979. After excluding the auxiliary and bureau activity costs which are necessary to generate a portion of these revenues, the net income available for program purposes was \$18,381,000, a modest increase of 3 percent of net operating funds which, as may be seen in Tables 2, 4, and 5, supported programs throughout the Institution.

*Restricted* funds may be used only for the purposes specified by the donor or funding source. Total restricted fund revenues for the year were \$5,339,000, consisting of \$2,257,000 from gifts and



TABLE 4. *Restricted Operating Trust Funds\**  
Fiscal Years 1978-1980  
(In \$1,000's)

<i>Item</i>	<i>Invest- ment</i>	<i>Gifts</i>	<i>Misc.</i>	<i>Total rev- enue</i>	<i>Deduc- tions</i>	<i>Trans- fers in (out)</i>	<i>Net in- crease (de- crease)</i>	<i>Fund bal- ance end of year</i>
FY 1978—Total .....	<u>\$2,022</u>	<u>\$3,478</u>	<u>\$1,038</u>	<u>\$6,538</u>	<u>\$4,367</u>	<u>\$ (1,261)</u>	<u>\$ 910</u>	<u>\$4,428</u>
FY 1979—Total .....	<u>\$2,075</u>	<u>\$1,775</u>	<u>\$ 727</u>	<u>\$4,577</u>	<u>\$3,983</u>	<u>\$ (345)</u>	<u>\$ 249</u>	<u>\$4,864</u>
FY 1980:								
Museum of Natural History .....	\$ 154	\$ 327	\$ 2	\$ 483	\$ 479	\$ —	\$ 4	\$ 467
Astrophysical Observatory .....	48	38	(6)	80	123	18	(25)	11
Tropical Research Institute .....	17	45	—	62	50	—	12	56
National Air and Space Museum .....	108	5	3	116	251	(667)	(802)	147
Chesapeake Bay Center ..	12	200	—	212	112	—	100	105
Fort Pierce Bureau .....	664	—	—	664	366	—	298	441
Other Science .....	157	149	1	307	151	(101)	55	353
Museum of History and Technology .....	48	290	(4)	334	366	—	(32)	332
National Collection of Fine Arts .....	42	63	—	105	230	—	(125)	55
National Portrait Gallery .	34	179	3	216	139	—	77	409
Hirshhorn Museum .....	50	75	—	125	137	—	(12)	500
Freer Gallery of Art .....	818	26	487	1,331	1,050	—	281	633
Archives of American Art .....	26	117	249	392	464	—	(72)	268
Cooper-Hewitt Museum..	49	361	7	417	482	—	(65)	256
Museum of African Art ..	11	21	1	33	134	—	(101)	73
Traveling Exhibition Service .....	4	150	—	154	9	—	145	149
All Other .....	107	211	(10)	308	313	(23)	(28)	319
Total FY 1980 ....	<u>\$2,349</u>	<u>\$2,257</u>	<u>\$ 733</u>	<u>\$5,339</u>	<u>\$4,856</u>	<u>\$ (773)</u>	<u>\$ (290)</u>	<u>\$4,574</u>

\* Does not include Federal Agency Grants and Contracts.

grants, \$2,349,000 from investment income, and \$733,000 from other sources including fundraising events of the Archives of American Art and the museum shop of the Freer Gallery of Art. Endowment income, as outlined more fully below, provides major operating support for the Freer and for oceanographic research conducted at the Fort Pierce Bureau, as well as for a wide range of other research and educational projects throughout the Institution. Major gifts were received during the year for exhibitions of the Cooper-Hewitt Museum, the National Museum of History and Technology, the National Portrait Gallery, and the Smithsonian Institution Traveling Exhibition Service; for collections acquisition at the National Museum of Natural History and the Hirshhorn Museum and Sculpture Garden; for documentation of the Catalogue of American Portraits at the National Portrait Gallery; and for a long-term watershed monitoring project at the Chesapeake Bay Center for Environmental Studies. A transfer of \$650,000 of funds available for the general support of the National Air and Space Museum was made to endowment funds, in order to ensure permanent funding of the Lindbergh Chair of Aerospace History.

*Unrestricted Special Purpose* funds consist of revenues generated by bureau activities, such as the National Air and Space Museum film theater and the Cooper-Hewitt Museum membership program; interest earned on investment of bureau fund balances; revenue-sharing with bureaux housing centrally managed shop and concession activities; and allocations of funds for the Collections Acquisition, Scholarly Studies, and Educational Outreach programs (\$2 million per year), fellowship awards (\$822,000) and a number of other designated purposes. The Collections Acquisition Program this year permitted a joint purchase by the National Portrait Gallery and the Museum of Fine Arts, Boston, of the pair of Gilbert Stuart portraits of George and Martha Washington; exhibit of these paintings will alternate between the two museums for three-year periods.

*Unrestricted General Purpose* funds are moneys, primarily generated from auxiliary activities, that are available for general purposes of the Institution. Net general unrestricted funds, after expenses of auxiliary activities, totaled \$11,605,000 (see Table 6), approximately the same level as in fiscal year 1979. Financial activity of the auxiliary activities that accounted for most of this



TABLE 5. *Unrestricted Special Purpose Funds*  
*Fiscal Years 1978-1980*  
(In \$1,000's)

Item	Revenue				Deductions				
	Invest- ment	Bu- reau activ- ities	Gifts and other rev- enue	Total rev- enue	Trans- fers in/ (out)	Pro- gram ex- pense	Bu- reau activ- ity ex- pense	Net in- crease (de- crease)	Fund bal- ance end of year
FY 1978 .....	\$175	\$1,327	\$ 506	\$2,008	\$5,450	\$1,284	\$ 862	\$ 5,312	\$ 9,604
FY 1979 .....	\$254	\$2,039	\$ 661	\$2,954	\$3,707	\$3,262	\$1,436	\$ 1,963	\$11,567
FY 1980:									
Museum of									
Natural History	\$ 42	\$   1	\$  41	\$   84	\$ 460	\$ 623	\$   1	\$  (80)	\$  266
Astrophysical									
Observatory ...	5	7	92	104	339	431	2	10	330
Tropical Research									
Institute .....	—	12	4	16	113	127	24	(22)	68
National Air and									
Space Museum.	195	1,177	16	1,388	147	226	1,048	261	2,443
Chesapeake Bay									
Center .....	—	22	4	26	30	91	15	(50)	14
National									
Zoological Park	74	—	215	289	49	152	—	186	999
Other Science ...	19	—	5	24	115	90	—	49	97
Museum of									
History and									
Technology ...	35	3	32	70	140	219	2	(11)	445
National									
Collection of									
Fine Arts .....	7	5	43	55	906	947	6	8	117
National									
Portrait Gallery	1	4	2	7	1,025	2,780	1	(1,749)	23
Hirshhorn									
Museum .....	10	—	9	19	12	49	—	(18)	123
Freer Gallery									
of Art .....	—	—	1	1	375	367	—	9	28
Cooper-Hewitt									
Museum .....	2	564	76	642	16	211	425	22	24
Museum of									
African Art ...	—	199	12	211	28	(8)	198	49	50
Liability Reserves	—	—	—	—	700	—	—	700	3,100
Unallocated									
Coll. Acq.,									
Schol. St.,									
and Outrch. ...	—	—	—	—	(1,134)	—	—	(1,134)	502
Fellowships .....	—	—	—	—	600	533	—	67	407
Other .....	40	55	219	314	331	523	91	31	859
FY 1980 Total	\$430	\$2,049	\$ 771	\$3,250	\$4,252	\$7,361	\$1,813	\$ (1,672)	\$ 9,895

TABLE 6. *Unrestricted Trust Funds—General and Auxiliary Activities Fiscal Years 1978–1980*  
(In \$1,000's)

<i>Item</i>	<i>FY 1978</i>	<i>FY 1979</i>	<i>FY 1980</i>
FUNDS PROVIDED			
General Income:			
Investments .....	\$ 1,400	\$ 2,276	\$ 2,470
Gifts .....	112	163	14
Miscellaneous .....	48	40	140
Total General Income .....	1,560	2,479	2,624
Auxiliary Activities Income (Net):			
Associates .....	7,656	6,429	6,113
Business Management			
—Museum Shops .....	738	287	1,022
—Concessions and Parking .....	1,567	1,641	1,938
—Other .....	(169)	(245)	(191)
Performing Arts .....	253	177	(75)
Smithsonian Press .....	(199)	292	252
Exposition Books .....	2,105	1,036	305
Traveling Exhibitions .....	(112)	(142)	(268)
Photo Services .....	(185)	(275)	(115)
Total Auxiliary Activities .....	11,654	9,200	8,981
Total Funds Provided (Net) .....	13,214	11,679	11,605
EXPENDITURES AND TRANSFERS			
Administrative and Program Expense ....	7,974	9,231	10,535
Less Administrative Recovery .....	5,200	5,888	6,575
Net Expense .....	2,774	3,343	3,960
Less Transfers:			
To Special Purpose			
for Program Purposes .....	5,700	3,879	4,307
To Plant Funds .....	869	1,853	1,281
To Endowment Funds .....	3,021	2,571	2,021
NET ADDITION TO FUND BALANCE ..	850	33	36
ENDING FUND BALANCE .....	\$ 4,932	\$ 4,965	\$ 5,001

income may be seen in Table 7. Total gross revenues of the activities increased almost \$8 million, or 12 percent. Since operating expenses rose in the same amount, driven by inflationary cost pressures, overall net income after expenses was relatively constant over the two years—roughly \$9 million. Some two-thirds of this auxiliary activity net income came from the Associate programs,



TABLE 7. *Auxiliary Activities Fiscal Years 1978–1980*  
(In \$1,000's)

Activity	Sales and other revenue	Gifts	Less cost of sales	Gross revenue	Ex- penses	Net revenue*** (loss)
FY 1978 .....	\$53,420	\$442	\$23,536	\$30,326	\$18,672	\$11,654
FY 1979 .....	\$64,846	\$475	\$31,884	\$33,437	\$24,237	\$ 9,200
FY 1980:						
Associates .....	\$43,892	\$898	\$30,686	\$14,104	\$ 7,991	\$ 6,113
Business Management:						
—Museum Shops* .....	14,588	—	7,273	7,315	6,293	1,022
—Concessions/Parking .	2,427	—	—	2,427	489	1,938
—Other** .....	370	—	—	370	561	(191)
Performing Arts .....	3,446	—	1,063	2,383	2,458	(75)
Smithsonian Press .....	2,131	—	1,003	1,128	876	252
Exposition Books .....	4,346	—	1,492	2,854	2,549	305
Traveling Exhibitions ....	759	—	—	759	1,027	(268)
Photo Services						
(Administration) .....	244	—	52	192	307	(115)
Total FY 1980 .....	\$72,203	\$898	\$41,569	\$31,532	\$22,551	\$ 8,981

\* Includes Museum Shops, Mail Order.

\*\* Includes Business Management Office, Belmont.

\*\*\* Before revenue-sharing transfers to participating Smithsonian bureaux of \$390,000 (FY 1978); \$397,000 (FY 1979); and \$381,000 (FY 1980).

generated largely by the *Smithsonian* magazine which has maintained its large number of enthusiastic readers. Also contributing sizable surpluses for other needs of the Institution were the Museum Shop and Mail Order divisions, owing to unexpectedly strong sales from three mail order catalogues, and the concessions/parking revenues, which benefitted from the popularity of the Institution's museums. Publications of both the Smithsonian Institution Press and Smithsonian Exposition Books sold well during the year, largely through mail order, and the combined surplus of these programs exceeded \$550,000. The unusually high level of interest rates during fiscal year 1980 as well as prior year additions to endowment funds resulted in investment income of \$2,470,000 last year, some \$200,000 higher than the prior year.

These funds enabled the Institution to continue programmatic and administrative support to a large number of bureaux, partic-

ularly the Cooper-Hewitt Museum, the Office of Folklife Programs, the Visitor Information and Associates' Reception Center, and the Office of Telecommunications. Transfers to Special Purpose funds were made to continue the Collections Acquisition, Scholarly Studies, and Educational Outreach programs (\$2 million), Fluid Research awards which meet small equipment, travel, and research needs of Smithsonian professional staff (\$200,000), and the Smithsonian Fellowship Program, at an increased level of stipend support to pre- and postdoctoral fellows (\$822,000).

As in past years, an addition of some \$2 million to the Institution's Unrestricted Endowment Funds was made at year-end, in order to ensure continuation in the future of projects supported from current revenues. As described below, transfers were also made to support construction projects, primarily the Quadrangle and the Sensory Garden. The Quadrangle also received \$40,000 this year from contributions of the Smithsonian Society of the Associates, which is expected to provide further support to the project in the future.

### *Other Operating Programs*

A separate appropriation of \$4.2 million was received for the Smithsonian Special Foreign Currency Program in blocked foreign currencies accumulated from sales of surplus agricultural commodities under Public Law 83-480. Of this amount, \$3.7 million (the same amount as in fiscal year 1979) was to continue a program of research grants to United States institutions in Egypt, India, Pakistan, and Burma in the disciplines of archaeology, systematic and environmental biology, astrophysics and earth sciences, and museum programs. The remaining \$500,000 was to establish a reserve of Indian rupees to ensure continued program support of the American Institute of Indian Studies after the supply of "excess" rupees is depleted. Obligation of these funds is shown in Table 8 by country and research discipline.

In fiscal year 1980 funds for support of the Smithsonian Science Information Exchange were appropriated to the Department of Commerce, rather than the Smithsonian as in prior years, and are therefore not reflected in this report.



TABLE 8. *Special Foreign Currency Program*  
Fiscal Year 1980—Obligations

Country	Archae- ology	System- atic and environ- mental biology	Astro- physics and earth sciences	Mu- seum pro- grams	Grant admin- istra- tion	Total
Burma . . . . .	\$ 12,200	\$ 15,663	\$ —	\$ —	\$ —	\$ 27,863
Egypt . . . . .	1,062,986	35,987	48,769	22,776	—	1,170,518
India . . . . .	2,497,558	218,146	40,196	234,313	41,339	3,031,552
Pakistan . . .	70,562	148,284	—	—	—	218,846
Total ..	<u>\$3,643,306</u>	<u>\$418,080</u>	<u>\$88,965</u>	<u>\$257,089</u>	<u>\$41,339</u>	<u>\$4,448,779*</u>

\* An additional amount of \$243,077 was obligated by the National Science Foundation, Science Information Program, for translations and printing of scientific publications requested by the Smithsonian Institution.

## Construction

In fiscal year 1980 an amount of \$32.1 million was appropriated to the Institution for construction projects of high priority to the Institution. The major portion of this funding, \$20.6 million, was for construction of the Museum Support Center in Suitland, Maryland. A further \$6.3 million was provided for development and repair of facilities of the National Zoological Park; major projects included design of the Aquatic Habitats Area and continuation of Central Area construction at Rock Creek Park, as well as design of a small mammal and bird breeding complex and construction of a centralized hoofed stock management complex at Front Royal. Finally, an amount of approximately \$5.3 million, more than twice the amount appropriated in fiscal year 1979, was designated for repairs and renovations at all other Smithsonian facilities. Of this amount, \$3.7 million was for phased programs such as façade and roof repairs at the National Museum of History and Technology as well as the Renwick Gallery and the Arts and Industries Building; the installation of fire detection and suppression systems; improvement of access for the disabled; the correction of hazardous conditions; repair of heating, ventilating, and air conditioning systems; and site development at the Mt. Hopkins, Arizona, observa-

TABLE 9. *Construction and Plant Funds Fiscal Years 1978–1980*  
(In \$1,000's)

<i>Sources</i>	<i>FY 1978</i>	<i>FY 1979</i>	<i>FY 1980</i>
FUNDS PROVIDED			
Federal Appropriations:			
National Zoological Park .....	\$2,500	\$3,900	\$ 6,250
Museum Support Center .....	325	575	20,600*
Restoration & Renovation of Buildings ..	2,425	2,100	5,250
Total Federal Appropriations .....	5,250	6,575	32,100
Nonappropriated Trust Funds:			
Income—Gift and Other			
Cooper-Hewitt Museum .....	60	—	104
Quadrangle .....	—	5	1,051
Total Income .....	60	5	1,155
Transfers from Current Funds:			
Barney House .....	70	—	—
Chesapeake Bay Center .....	344	411	39
Cooper-Hewitt Museum .....	(10)	—	—
Museum of African Art .....	—	4	22
National Zoological Park .....	110	—	—
Renwick Gates (Victorian Garden) ....	225	—	—
Sensory and East Gardens .....	100	10	241
Quadrangle .....	30	1,385	1,040
Tropical Research Institute .....	—	47	—
Total Transfers .....	869	1,857	1,342
Total Funds Provided .....	\$6,179	\$8,437	\$34,597

\* Obligation authority of \$19 million deferred until FY 1981 on instructions from Office of Management and Budget.

tory. The balance of these funds were applied to numerous other facility improvement projects required to preserve and to maintain the Institution's buildings in safe and working order.

A total of \$1,342,000 in nonappropriated funds was transferred to facilities development and land acquisition in fiscal year 1980, and a further \$1,155,000 of gifts and other income was received for construction projects. A gift of \$1 million for the Quadrangle was received in March 1980 from the government of Japan in fulfillment of its earlier pledge toward this facility. In addition, the Institution set aside a further \$1 million of unrestricted trust funds for the Quadrangle, of which \$500,000 was designated for use in fiscal year 1980 to continue planning and engineering



studies for congressional review prior to the appropriation of federal funds for this project. Additional funds were transferred for development of a Sensory Garden to be located in the area to the east of the Arts and Industries Building and for minor payments related to land acquisition at the Chesapeake Bay Center and the Museum of African Art.

*Endowment and Similar Funds*

The Smithsonian Endowment Funds, as shown on Table 10, totaled \$78,390,000 on September 30, 1980, as compared to \$66,619,000 on September 30, 1979. Of these funds, \$77,330,000 is invested

TABLE 10. *Endowment and Similar Funds September 30, 1980*

	<i>Book value</i>	<i>Market value</i>
ASSETS		
Pooled Consolidated Endowment Funds:		
Cash and Equivalents .....	\$ 476,218	\$ 476,218
Bonds .....	12,850,192	13,821,370
Convertible Bonds .....	621,000	689,000
Stocks .....	49,423,674	62,343,318
Total Pooled Funds .....	63,371,084	77,329,906
Nonpooled Endowment Funds:		
Notes Receivable .....	38,138	38,138
Loan to U.S. Treasury in Perpetuity .....	1,000,000	1,000,000
Bonds .....	9,769	8,800
Common Stocks .....	3,321	13,095
Total Nonpooled Funds .....	1,051,228	1,060,033
Total Endowment and Similar Fund Balances ..	\$64,422,312	\$78,389,939
FUND BALANCES		
Unrestricted Purpose: True Endowment .....	\$ 2,472,281	\$ 3,519,606
Quasi Endowment .....	22,439,628	25,763,348
Total Unrestricted Purpose .....	24,911,909	29,282,954
Restricted Purpose: True Endowment .....	35,918,089	44,992,715
Quasi Endowment .....	3,592,314	4,114,270
Total Restricted Purpose .....	39,510,403	49,106,985
Total Endowment and Similar Fund Balances ..	\$64,422,312	\$78,389,939

in the Pooled Consolidated Endowment Fund, \$1 million is on permanent deposit in the United States Treasury, and the remaining \$60,000 is held in miscellaneous securities. The majority of the Institution's endowment funds (\$49,107,000, or 63 percent) is restricted, with income available for use only as specified by the original donor; the remaining \$29,283,000, or 37 percent, is unrestricted and supports general programs of the Institution. A portion of these latter funds, however, has been designated by the Institution for specific purposes, such as the Lindbergh Chair of Aerospace History Endowment, which will enable term appointments of leading scholars at the National Air and Space Museum. The unrestricted endowments have grown in recent years owing largely to transfers of moneys from current funds, as approved by the Board of Regents; \$2,660,000 was so transferred in fiscal year 1980, and \$2,650,000 in fiscal year 1979. During the year, a thorough review of all endowment funds was conducted to ensure proper classification and documentation of their sources and restrictions, resulting in the reclassification of several funds. A full listing of all endowment funds may be seen in Table 13.

The Pooled Consolidated Endowment Fund is invested under the management of outside professional advisory firms under close supervision of the Investment Policy Committee and the Treasurer, subject to policy guidelines approved by the Smithsonian's Board of Regents. As of the end of this year these firms, with the portion of the Fund under their management, were Batterymarch Financial Management (30 percent), Fiduciary Trust Company of New York (53 percent), and Torray Clark & Company (17 percent). During fiscal year 1980, the total rate of return (market appreciation as well as interest and dividend yield) of the Pooled Consolidated Endowment Fund, as calculated by an independent investment measurement service, was +18.8 percent, as compared to +12.9 percent for the Dow Jones Industrial Average, and +21.2 percent for the Standard & Poor's 500 Average, both calculated on the same basis. Of the \$11,774,000 increase in market value of the Fund during the year, \$7,829,000 was due to market appreciation, \$2,846,000 to gifts and transfers, and \$1,099,000 to dividend and interest yield reinvested in principal (see Table 12).

Under the Total Return Income policy followed by the Institution, a prudent portion of investment return (interest, dividends,



TABLE 11. *Market Values of Pooled Consolidated Endowment Funds*  
(In \$1,000's)

<i>Fund</i>	<i>9/30/76</i>	<i>9/30/77</i>	<i>9/30/78</i>	<i>9/30/79</i>	<i>9/30/80</i>
Unrestricted .....	\$ 8,336	\$12,525	\$18,114	\$22,614	\$28,384
Freer .....	16,035	15,410	16,807	18,303	20,771
Endowment No. 3 .....	12,701	12,343	13,462	15,022	17,047
Restricted .....	6,561	6,601	8,647	9,617	11,128
Total .....	<u>\$43,633</u>	<u>\$46,879</u>	<u>\$57,030</u>	<u>\$65,556</u>	<u>\$77,330</u>

TABLE 12. *Changes in Pooled Consolidated Endowment Funds*  
*for Fiscal Year 1980*  
(In \$1,000's)

<i>Fund</i>	<i>Market value 9/30/79</i>	<i>Gifts and trans- fers</i>	<i>Inter- est and divi- dends*</i>	<i>Income paid out</i>	<i>Sub- total</i>	<i>Market value appre- ciation</i>	<i>Market value 9/30/80</i>
Unrestricted .....	\$22,614	\$2,660	\$1,334	\$ 951	\$25,657	\$2,727	\$28,384
Freer .....	18,303	—	1,068	763	18,608	2,163	20,771
Endowment No. 3 ...	15,022	—	876	626	15,272	1,775	17,047
Restricted .....	9,617	186	567	406	9,964	1,164	11,128
Total .....	<u>\$65,556</u>	<u>\$2,846</u>	<u>\$3,845</u>	<u>\$2,746</u>	<u>\$69,501</u>	<u>\$7,829</u>	<u>\$77,330</u>

\* Income earned less managers' fees.

and capital appreciation) is available for expenditure each year as income, and the remainder is retained as principal. This total return income payout is determined each year based on a review of anticipated dividend and interest yields, support needs of the Institution's bureaux, inflationary factors, and the five-year running average of market values, adjusted for additions or withdrawals of capital. The amount of such income paid in fiscal year 1980 to endowments in the Pooled Consolidated Endowment Fund represented an increase of 5.5 percent over the fiscal year 1979 rate of income, and a further increase of 10 percent has been approved for fiscal year 1981. Even after this payout, \$1,099,000 of excess interest and dividend yield was available for reinvestment into principal.

TABLE 13. *Endowment Funds September 30, 1980*

<i>Fund</i>	<i>Principal</i>		<i>Income</i>	
	<i>Book value</i>	<i>Market value</i>	<i>Net income</i>	<i>Unex- pended balance</i>
UNRESTRICTED PURPOSE—TRUE:				
Avery Fund* .....	\$ 77,212	\$ 115,453	\$ 4,568	\$ —0—
Higbee, Harry Memorial* .....	21,771	33,644	1,263	—0—
Hodgkins Fund* .....	178,777	195,737	9,890	—0—
Morrow, Dwight W. ....	123,749	198,873	7,307	—0—
Mussinán, Alfred .....	41,786	58,159	2,137	—0—
Olmsted, Helen A. ....	1,332	2,030	74	—0—
Poore, Lucy T. and George W.* .....	287,043	450,614	17,176	—0—
Porter, Henry Kirke, Memorial .....	458,300	734,365	26,982	—0—
Sanford, George H.* .....	2,525	3,380	150	—0—
Smithson, James .....	541,380	541,380	32,483	—0—
Walcott, Charles D. and Mary Vaux, Research (Designated) .....	738,406	1,185,971	43,686	28,874
Subtotal .....	2,472,281	3,519,606	145,716	28,874
UNRESTRICTED PURPOSE—QUASI:				
Forrest, Robert Lee .....	2,244,621	2,213,074	81,312	—0—
General Endowment* .....	18,307,656	21,467,383	724,171	—0—
Goddard, Robert H. ....	17,756	17,526	644	—0—
Habel, Dr. S.* .....	500	500	30	—0—
Hart, Gustavus E. ....	1,013	1,311	48	—0—
Henry, Caroline .....	2,515	3,235	119	—0—
Henry, Joseph and Harriet A. ....	101,647	129,380	4,753	—0—
Heys, Maude C. ....	213,413	215,344	7,912	—0—
Hinton, Carrie Susan .....	53,770	62,918	2,312	—0—
Lambert, Paula C. ....	95,604	115,572	4,246	—0—
Medinus, Grace L. ....	2,106	2,142	79	—0—
Rhees, William Jones* .....	1,572	1,844	81	—0—
Safford, Clara Louise .....	96,042	100,586	3,696	—0—
Smithsonian Bequest Fund .....	10,077	10,883	264	—0—
Taggart, Ganson .....	786	1,225	45	—0—
Abbott, William L. (Designated) .....	246,935	313,690	11,526	—0—
Barstow, Frederic D. (Designated) ....	2,070	2,622	96	2,893
Lindbergh Chair of Aerospace History (Designated) .....	1,025,977	1,086,447	17,522	30,141
Lindbergh, Charles A. (Designated) ...	6,653	8,318	771	2,838
Lyon, Marcus Ward, Jr. (Designated) ..	8,915	9,348	343	343
Subtotal .....	22,439,628	25,763,348	859,970	36,215
Total Unrestricted Purpose .....	\$24,911,909	\$29,282,954	\$1,005,686	\$ 65,089
RESTRICTED PURPOSE—TRUE:				
Arthur, James .....	\$ 64,003	\$ 102,746	\$ 3,775	\$ 4,889
Baird, Spencer Fullerton .....	58,710	91,844	3,374	3,727
Barney, Alice Pike, Memorial .....	45,900	73,628	2,705	12,896
Batchelor, Emma E. ....	68,534	76,161	2,798	27,435
Beauregard, Catherine, Memorial .....	81,147	102,889	3,780	12,941
Brown, Roland W. ....	53,914	70,614	2,594	12,159
Canfield, Frederick A. ....	60,982	113,203	4,159	812
Casey, Thomas Lincoln .....	25,974	32,986	1,212	2,832
Chamberlain, Frances Lea .....	45,067	72,294	2,656	9,378
Cooper Fund for Paleobiology .....	21,878	25,651	867	6
Division of Mammals Curators Fund ...	3,584	4,330	159	2,946
Drake Foundation* .....	333,084	386,714	14,130	34,123
Dykes, Charles, Bequest ... ..	89,207	113,236	4,160	23,030
Eickemeyer, Florence Brevoort .....	17,396	27,894	1,025	9,287
Endowment No. 3 .....	13,716,662	17,046,912	630,170	440,529
Freer, Charles L. ....	16,422,587	20,771,334	763,235	400,234
Guggenheim, Daniel and Florence .....	248,702	265,110	9,740	—0—
Hamilton, James* .....	3,144	3,612	191	191
Henderson, Edward P., Meteorite Fund. .	644	914	34	213
Hewitt, Eleanor G., Repair Fund .....	14,529	16,668	612	—0—
Hewitt, Sarah Cooper .....	86,004	98,384	3,615	—0—
Hitchcock, Albert S. ....	2,524	4,116	152	852



TABLE 13. *Endowment Funds September 30, 1980—continued*

Fund	Principal		Income	
	Book value	Market value	Net income	Unexpended balance
Hodgkins Fund*	100,000	100,000	6,000	7,025
Hrdlicka, Ales and Marie	97,654	127,915	4,700	3,721
Hughes, Bruce	30,631	49,197	1,808	13,427
Kellogg, Remington, Memorial	51,459	52,845	1,906	5,330
Kramar, Nada	5,570	6,725	247	1,138
Lindsey, Jessie H.*	11,177	10,496	792	3,354
Maxwell, Mary E.	31,389	50,407	1,852	11,624
Milliken, H. Oothout, Memorial	429	490	18	—0—
Mineral Endowment	193,887	226,377	8,317	2,463
Mitchell, William A.	26,344	30,968	1,138	2,372
Natural History and Conservation	27,997	33,244	1,142	—0—
Nelson, Edward William	38,151	57,081	2,097	—0—
Petrocelli, Joseph, Memorial	11,862	19,120	703	13,151
Reid, Addison T.*	47,854	57,779	2,379	8,402
Roebeling Fund	193,325	308,349	11,330	142
Rollins, Miriam and William	360,965	504,076	18,312	12,231
Shryock Endowment for Docents	1,341	1,461	35	35
Sprague Fund	2,582,750	3,014,222	109,515	25,496
Springer, Frank	28,976	46,013	1,691	22,862
Stern, Harold P., Memorial	275,560	323,324	11,320	12,509
Stevenson, John A., Mycological Library	9,990	12,571	462	509
Walcott, Charles D. and Mary Vaux, Research	232,367	313,186	12,166	8,644
Walcott Research Fund, Botanical Publications*	92,715	143,210	5,262	8,380
Zerbee, Frances Brinckle	1,520	2,419	90	2,521
Subtotal	35,918,089	44,992,715	1,658,425	1,163,816
RESTRICTED PURPOSE—QUASI:				
Armstrong, Edwin James	5,512	6,249	225	—0—
Au Panier Fleuri	42,956	42,576	1,564	—0—
Bacon, Virginia Purdy	187,993	213,691	7,851	29,823
Becker, George F.	323,051	369,860	13,589	—0—
Desautels, Paul E.	18,769	24,361	875	—0—
Gaver, Gordon	2,484	3,008	110	622
Hachenberg, George P. and Caroline	8,369	11,243	413	413
Hanson, Martin Gustav and Caroline R.	18,421	23,382	859	3,599
Hillyer, Virgil	13,620	17,298	636	4,947
Johnson, E. R. Fenimore	16,615	17,313	636	10,332
Loeb, Morris	181,031	231,901	8,520	14,684
Long, Annette E. and Edith C.	869	1,432	53	258
Myer, Catherine Walden	41,866	53,148	1,953	5,524
Noyes, Frank B.	2,015	2,679	98	2,214
Noyes, Pauline Riggs	20,222	20,063	737	—0—
Pell, Cornelia Livingston	15,380	19,621	721	47
Ramsey, Adm. and Mrs. Dewitt Clinton*	608,239	645,001	24,259	3,788
Rathbun, Richard, Memorial	22,061	28,113	1,033	15,290
Roebeling Solar Research	51,052	60,444	2,221	2,776
Ruef, Bertha M.	64,797	67,467	2,479	4,283
Schultz, Leonard P.	16,076	20,337	747	11,323
Seidell, Atherton	1,284,402	1,461,248	53,689	114,126
Smithsonian Agency Account	358,455	408,450	14,064	—0—
Strong, Julia D.	20,737	26,417	970	1,344
Witherspoon, Thomas A., Memorial	267,322	338,968	12,454	12,454
Subtotal	3,592,314	4,114,270	150,756	237,847
Total Restricted Purpose	\$39,510,403	\$49,106,985	\$1,809,181	\$1,401,663
TOTAL ENDOWMENT FUNDS	\$64,422,312	\$78,389,939	\$2,814,867**	\$1,466,752

\* Invested all or in part in U.S. Treasury or other nonpooled investments.

\*\* Total Return Income payout; does not include \$127,000 of interest income for investment of unexpended income balances.

A listing of the securities held in the Pooled Consolidated Endowment Fund as of September 30, 1980, may be obtained upon request from the Treasurer of the Institution.

### *Related Organizations*

The Smithsonian Science Information Exchange, Inc. (SSIE) is devoted to facilitating the planning, management, and coordination of the nation's research through the collection, processing, and dissemination of information about ongoing research. Incorporated by the Smithsonian in 1971 as a separate nonprofit entity, SSIE was funded in past years through an annual contract from the Smithsonian, equal to the appropriation provided the Smithsonian for this purpose. As noted in last year's report, the fiscal 1980 appropriation for SSIE was made to the Department of Commerce in anticipation of the integration of the functions of SSIE into the National Technical Information Service (NTIS). Pending consolidation of these activities and termination of the corporation, the Smithsonian has continued to provide SSIE with administrative and fiscal services on a contract basis.

Reading is Fundamental, Inc. (RIF), associated with the Institution since 1968, is an independent, separately incorporated entity dedicated to the improvement of reading abilities in children. Primary support is derived from private contributions and a federal contract with the Department of Education to operate the federal Inexpensive Book Distribution Program. Administrative services are provided by the Institution on a contract basis.

The Woodrow Wilson International Center for Scholars, the National Gallery of Art, and the John F. Kennedy Center for the Performing Arts were established by Congress within the Institution but are administered by separate boards of trustees. Independent financial reports are prepared by each of these organizations. Office space and fiscal and other administrative and support services are provided the Woodrow Wilson International Center for Scholars on a reimbursement basis.

The Friends of the National Zoo (FONZ) is an independent, nonprofit corporation working closely with the National Zoological



Park. It operates under contract a number of beneficial concessions for the National Zoo. FONZ provided concession and rental fees to the Zoo amounting to more than \$147,000 during calendar year 1979 (FONZ's fiscal year). In addition, FONZ contributed other important financial and volunteer support for Zoo programs. Financial affairs of this organization are disclosed separately elsewhere in *Smithsonian Year 1980*.

## *Accounting and Auditing*

The nonappropriated trust funds of the Institution are audited annually by an independent public accounting firm; the report of Coopers & Lybrand is contained in the following pages. Additional reviews are conducted annually on a number of Smithsonian activities by the internal audit staff. Additionally, the Defense Contract Audit Agency conducts an annual audit of grants and contracts received from federal agencies, as well as general and administrative costs.

The Audit and Review Committee of the Regents held several meetings during the year pursuant to their responsibility, under the bylaws of the Institution, for reviewing the Smithsonian's accounting systems and internal financial controls; for facilitating communication between the Board of Regents and auditors from the internal audit staff, the independent accounting firm, and the General Accounting Office; and for reviewing operations of the Institution for compliance with approved programs and policies.



Distinctive museum shop displays have won design awards and keep business at a brisk pace year round. Carrying out the theme of the Centennial in the Arts and Industries Building, the Smith & Sun Photographic Gallery in the 1876 Museum Shop produces authentic tintypes and supplies period costumes. *Below.* The Craft Shop in the National Museum of History and Technology features handmade crafts from across the United States. Articles on sale are similar to those on display in the museum, this being the marketing rationale.





# COOPERS & LYBRAND

CERTIFIED PUBLIC ACCOUNTANTS

IN PRINCIPAL AREAS  
OF THE WORLD

To the Board of Regents  
Smithsonian Institution

We have examined the balance sheet of the Trust Funds of Smithsonian Institution as of September 30, 1980 and the related statement of financial activity for the year then ended. Our examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. We previously examined and reported upon the statements of the Trust Funds of Smithsonian Institution for the year ended September 30, 1979, totals of which are included in the accompanying financial statements for comparative purposes only.

The statements of the Trust Funds of Smithsonian Institution do not include the accounts of the National Gallery of Art, the John F. Kennedy Center for the Performing Arts, or other departments, bureaus and programs administered by the Smithsonian Institution under federal appropriations as detailed in Note 2 to the financial statements.

In our opinion, the financial statements for the year ended September 30, 1980, referred to above, present fairly the financial position of the Trust Funds of Smithsonian Institution as of September 30, 1980, and the results of operations and changes in fund balances for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

COOPERS & LYBRAND

1800 M Street, N.W.  
Washington, D.C. 20036  
November 28, 1980

SMITHSONIAN INSTITUTION—TRUST FUNDS  
Balance Sheet

September 30, 1980  
(with comparative totals for September 30, 1979)

	<i>Current funds</i>
<hr/>	
ASSETS:	
Cash .....	\$ 39,958
Investments (Notes 3 and 5) .....	21,785,307
Receivables (Note 4) .....	11,051,484
Interfund receivables .....	—
Merchandise inventory (Note 1) .....	6,244,380
Prepaid and deferred expense (Note 1) .....	7,294,999
Property and equipment (Notes 1 and 6) .....	1,469,019
	<u>\$47,885,147</u>
LIABILITIES:	
Accounts payable and accrued expenses .....	\$ 5,759,026
Deposits held in custody for other organizations (Note 2) ..	1,218,910
Interfund payables .....	4,272,661
Deferred revenue (Note 1) .....	17,063,378
Total liabilities .....	<u>28,313,975</u>
FUND BALANCES (Note 1):	
Current:	
Unrestricted general purpose .....	5,000,736
Special purpose .....	9,895,106
Restricted .....	4,675,330
Endowment and similar funds (Note 5) .....	—
Plant funds (Note 6) .....	—
Total fund balances .....	<u>19,571,172</u>
	<u>\$47,885,147</u>
<hr/>	

The accompanying notes are an integral part of the financial statements.



Endowment  
and similar  
funds

Plant funds

Total, all funds

Totals, 1979

\$ 41,164	\$ —	\$ 81,122	\$ 1,129,402
63,907,957	—	85,693,264	79,127,984
38,138	—	11,089,622	9,873,408
435,053	3,837,608	4,272,661	4,308,574
—	—	6,244,380	4,505,523
—	—	7,294,999	6,414,963
—	12,543,726	14,012,745	13,203,767
<u>\$64,422,312</u>	<u>\$16,381,334</u>	<u>\$128,688,793</u>	<u>\$118,563,621</u>
\$ —	\$ 209,846	\$ 5,968,872	\$ 5,656,838
—	—	1,218,910	1,745,609
—	—	4,272,661	4,308,574
—	—	17,063,378	13,247,924
—	209,846	28,523,821	24,958,945
—	—	5,000,736	4,964,511
—	—	9,895,106	11,567,125
—	—	4,675,330	4,900,178
64,422,312	—	64,422,312	58,479,808
—	16,171,488	16,171,488	13,693,054
<u>64,422,312</u>	<u>16,171,488</u>	<u>100,164,972</u>	<u>93,604,676</u>
<u>\$64,422,312</u>	<u>\$16,381,334</u>	<u>\$128,688,793</u>	<u>\$118,563,621</u>

SMITHSONIAN INSTITUTION—TRUST FUNDS  
Statement of Financial Activity  
Year ended September 30, 1980  
(with comparative totals for the year ended September 30, 1979)

	Current funds		
		Unrestricted	
	Total current funds	Total unrestricted funds	General purpose
REVENUE AND OTHER ADDITIONS:			
Auxiliary activities revenue .....	\$74,251,010	\$74,251,010	\$ —
Federal grants and contracts .....	12,946,943	—	—
Investment income (net of \$283,955 for management and custodian fees) .....	6,348,438	3,282,808	2,822,779
Net gain on sale of securities .....	252	252	252
Gifts, bequests and foundation grants .....	3,226,682	969,453	14,005
Additions to plant fund .....	—	—	—
Rentals, fees, commissions and other .....	2,225,672	1,492,995	778,958
Total revenue and other additions .....	98,998,997	79,996,518	3,615,994
EXPENDITURES AND OTHER DEDUCTIONS:			
Research and educational expenditures .....	24,472,580	9,709,811	2,457,778
Administrative expenditures .....	8,077,438	5,103,286	2,140,313
Auxiliary activities expenditures .....	63,079,852	63,079,852	—
Expenditures for acquisition of plant .....	—	—	—
Retirement of indebtedness .....	—	—	—
Interest on indebtedness .....	—	—	—
	95,629,870	77,892,949	4,598,091
Excess of revenue and other additions over (under) expenditures and other deductions..	3,369,127	2,103,569	(982,097)
TRANSFERS AMONG FUNDS— ADDITIONS (DEDUCTIONS):			
Mandatory principal and interest on notes .....	(61,371)	(61,371)	(38,992)
Portion of investment yield appropriated (Note 5) ..	(1,099,438)	(383,021)	(353,033)
Purchase of property and equipment for plant fund ..	(530,698)	(530,698)	(530,698)
Future plant acquisitions .....	(710,060)	(710,060)	(671,802)
Income added to endowment principal .....	(107,474)	—	—
Appropriated as quasi endowment .....	(2,680,728)	(2,030,728)	(2,021,053)
For designated purposes .....	(40,000)	(23,485)	(3,966,025)
Net increase in auxiliary activities .....	—	—	8,599,925
Total transfers among funds .....	(5,229,769)	(3,739,363)	1,018,322
Net increase (decrease) for the year .....	(1,860,642)	(1,635,794)	36,225
Fund balances at beginning of year .....	21,431,814	16,531,636	4,964,511
Fund balances at end of year .....	\$19,571,172	\$14,895,842	\$ 5,000,736

The accompanying notes are an integral part of the financial statements.



<i>Auxiliary activities</i>	<i>Special purpose</i>	<i>Restricted</i>	<i>Endowment and similar funds</i>	<i>Plant funds</i>	<i>Total, all funds</i>	<i>Totals, 1979</i>
\$72,202,047	\$ 2,048,963	\$ —	\$ —	\$ —	\$ 74,251,010	\$66,884,616
—	—	12,946,943	—	—	12,946,943	11,411,790
—	460,029	3,065,630	—	58,964	6,407,402	5,598,435
—	—	—	1,998,957	—	1,999,209	506,101
898,835	56,613	2,257,229	55,907	1,096,507	4,379,096	2,554,149
—	—	—	—	665,896	665,896	395,971
—	714,037	732,677	—	—	2,225,672	1,983,617
73,100,882	3,279,642	19,002,479	2,054,864	1,821,367	102,875,228	89,334,679
—	7,252,033	14,762,769	—	—	24,472,580	18,375,482
2,593,470	369,503	2,974,152	—	—	8,077,438	6,842,542
61,526,783	1,553,069	—	—	—	63,079,852	55,015,797
—	—	—	—	623,691	623,691	348,921
—	—	—	—	42,205	42,205	47,049
—	—	—	—	19,166	19,166	9,021
64,120,253	9,174,605	17,736,921	—	685,062	96,314,932	80,638,812
8,980,629	(5,894,963)	1,265,558	2,054,864	1,136,305	6,560,296	8,695,867
—	(22,379)	—	—	61,371	—	—
—	(29,988)	(716,417)	1,099,438	—	—	—
—	—	—	—	530,698	—	—
—	(38,258)	—	—	710,060	—	—
—	—	(107,474)	107,474	—	—	—
—	(9,675)	(650,000)	2,680,728	—	—	—
(380,704)	4,323,244	(16,515)	—	40,000	—	—
(8,599,925)	—	—	—	—	—	—
(8,980,629)	4,222,944	(1,490,406)	3,887,640	1,342,129	—	—
—	(1,672,019)	(224,848)	5,942,504	2,478,434	6,560,296	8,695,867
—	11,567,125	4,900,178	58,479,808	13,693,054	93,604,676	84,908,809
\$ —	\$ 9,895,106	\$ 4,675,330	\$64,422,312	\$16,171,488	\$100,164,972	\$93,604,676

## SMITHSONIAN INSTITUTION—TRUST FUNDS

### Notes to Financial Statements

#### 1. *Summary of significant accounting policies*

*Basis of presentation.* The financial statements of Smithsonian Institution—Trust Funds (Institution) have been prepared on the accrual basis.

*Fund accounting.* To ensure observance of limitations and restrictions placed on the use of resources available to the Institution, the accounts of the Institution are maintained in accordance with the principles of fund accounting. This is the procedure by which resources for various purposes are classified for accounting and reporting purposes into funds established according to their nature and purposes. Separate accounts are maintained for each fund; however, in the accompanying financial statements, funds that have similar characteristics have been combined into fund groups. Accordingly, all financial transactions have been recorded and reported by fund group.

The assets, liabilities and fund balances of the Institution are reported in self-balancing fund groups as follows:

Current funds, which include unrestricted and restricted resources, represent the portion of expendable funds that is available for support of Institution operations. Separate subfund groups of current unrestricted funds have been reflected in the financial statements for auxiliary activities (representing primarily the revenue and expenditures of the Smithsonian Associates Program, including the *Smithsonian Magazine*, and museum shop sales) and for special purposes (representing internally segregated funds for certain designated purposes). Amounts restricted by the donor for specific purposes are also segregated from other current funds.

Endowment and similar funds include funds that are subject to restrictions of gift instruments requiring in perpetuity that the principal be invested and the income only be used. Also classified as endowment and similar funds are gifts which will allow the expenditure of principal but only under certain specified conditions and quasi-endowment funds. Quasi-endowment funds are funds established by the governing board for the same purposes as endowment funds; however, any portion of such funds may be expended. Restricted quasi-endowment funds represent gifts for restricted purposes where there is no stipulation that the principal be maintained in perpetuity or for a period of time, but the governing board has elected to invest the principal and expend only the income for the purpose stipulated by the donor.

Plant funds represent resources restricted for future plant acquisitions and funds expended for plant.

All gains and losses arising from the sale, collection or other disposition of investments are accounted for in the fund in which the related assets are recorded. Income from investments is accounted for in a similar manner, except for income derived from investments of endowment and similar funds, which is accounted for in the fund to which it is restricted or, if unrestricted, as revenue in unrestricted current funds.



*Inventories.* Inventories are carried at the lower of average cost, computed on a first-in, first-out method, or net realizable value.

*Deferred revenue and expense.* Revenue from subscriptions to *Smithsonian Magazine* is recorded as income over the period of the related subscription, which is one year. Costs related to obtaining subscriptions to *Smithsonian Magazine* are charged to income over the period of the subscription.

The Institution recognizes revenue and charges expenses of other auxiliary activities during the period in which the activity is conducted.

*Works of art, living or other specimens.* In accordance with the practice generally followed by museums, works of art and living or other specimens are not reflected in the accompanying financial statements.

*Property and equipment.* Capitalized improvements and equipment purchased with Trust Funds and utilized in income-producing activities are capitalized in the current unrestricted fund at cost and are depreciated on a straight-line basis over their estimated useful lives of three to ten years.

Real estate (land and buildings) are recorded in the plant fund at cost, to the extent that restricted or unrestricted funds were expended therefor, or appraised value at date of gift, except for gifts of certain islands in Chesapeake Bay and the Carnegie Mansion, which have been recorded at nominal values. In accordance with the practice of many museums, depreciation on buildings is not recorded.

All other land, buildings, fixtures and equipment which were principally acquired with federal funds are not reflected in the accompanying financial statements.

*Government contracts.* The Institution has a number of contracts with the U.S. Government, which primarily provide for cost reimbursement to the Institution. Contract revenue is recognized when billable or received.

*Contributed services.* A substantial number of unpaid volunteers have made significant contributions of their time in the furtherance of the Institution's programs. The value of this contributed time is not reflected in these statements since it is not susceptible to objective measurement or valuation.

## 2. *Related activities*

The Trust Funds reflect the receipt and expenditure of funds obtained from private sources, from federal grants and contracts, and from certain business activities related to the operations of the Institution.

Federal appropriations, which are not reflected in the accompanying financial statements, provide major support for the operations and administration of the educational and research programs of the Institution's many museums, art galleries and other bureaus, as well as for the maintenance and construction of related buildings and facilities. In addition, land, buildings and other assets acquired with federal funds are not reflected in the accompanying financial statements.

The following federal appropriations were received by the Institution for the fiscal years ended September 30, 1980 and 1979:

	1980	1979
Operating funds .....	\$107,764,000	\$100,265,000
Special foreign currency program .....	4,200,000	3,700,000
Construction funds .....	32,100,000	6,575,000
	<u>\$144,064,000</u>	<u>\$110,540,000</u>

The Institution provides fiscal and administrative services to several separately incorporated organizations in which certain officials of the Institution serve on the governing boards. The amounts paid to the Institution by these organizations for the aforementioned services, together with rent for Institution facilities occupied, etc., totaled approximately \$370,000 for the year ended September 30, 1980. The following summarizes the approximate expenditures of these organizations for the fiscal years ended September 30, 1980 and 1979, respectively, as reflected in their individual financial statements and which are not included in the accompanying financial statements of the Institution:

	1980	1979
Smithsonian Science Information Exchange .....	\$3,310,000	\$3,293,000
Reading Is Fundamental, Inc. ....	\$7,721,000	\$4,042,000
Woodrow Wilson International Center for Scholars—Trust Funds .....	\$2,583,000	\$2,306,000

The Institution is continuing to work with the U.S. Department of Commerce to effect a transfer of the Smithsonian Science Information Exchange operations to the U.S. Department of Commerce. Pending completion of this transfer, the Institution will continue to provide fiscal and administrative services.

### 3. Investments

Investments are recorded at cost, if purchased, or at fair market value at date of acquisition, if acquired by gift. At September 30, 1980, investments are composed of the following:

	Carrying value	Market value
Current funds:		
Certificates of deposit .....	\$ 4,219,219	\$ 4,219,219
Commercial paper .....	4,551,390	4,500,000
Overnight money market account .....	2,175,000	2,175,000
U.S. Government and quasi-government obligations .....	10,614,071	10,304,780
Common stock .....	169,280	97,346
Preferred stock .....	56,347	39,948
	<u>21,785,307</u>	<u>21,336,293</u>
Endowment and similar funds:		
Loan to U.S. Treasury .....	\$ 1,000,000	\$ 1,000,000
Commercial paper .....	850,000	850,000
U.S. Government and quasi-government obligations .....	9,508,399	9,385,439
Corporate bonds .....	3,112,793	4,274,931
Common stock .....	48,715,240	61,606,964
Preferred stock .....	721,525	758,250
	<u>63,907,957</u>	<u>77,875,584</u>
	<u>\$85,693,264</u>	<u>\$99,211,877</u>



Substantially all of the investments of the endowment and similar funds are pooled on a market value basis (consolidated fund) with each individual fund subscribing to or disposing of units on the basis of the value per unit at market value at the beginning of the month within which the transaction takes place. Of the total units, each having a market value of \$136.08, 350,359 units were owned by endowment and 217,896 units were owned by quasi endowment at September 30, 1980.

The following tabulation summarizes changes in relationships between cost and market values of the pooled investments:

	<u>Market</u>	<u>Cost</u>	<u>Net gains</u>	<u>Market value per unit</u>
End of year .....	\$77,329,906	\$63,371,084	\$13,958,822	\$136.08
Beginning of year .....	\$65,555,748	\$57,426,159	8,129,589	119.91
Unrealized net gains for year .....			5,829,233	—
Realized net gains for year .....			1,998,957	—
Total net gains for year .....			<u>\$ 7,828,190</u>	<u>\$ 16.17</u>

#### 4. Receivables

Receivables at September 30, 1980 and 1979, included the following:

<i>Current funds</i>	<u>1980</u>	<u>1979</u>
Accounts receivable, auxiliary activities; net of allowance for doubtful accounts of \$251,000 in 1980 and \$258,000 in 1979 .....	\$ 8,728,065	\$7,881,683
Unbilled costs and fees from grants and contracts .....	989,722	658,318
Interest and dividends receivable .....	945,455	949,571
Other .....	388,242	343,528
	<u>11,051,484</u>	<u>9,833,100</u>
<i>Endowment and similar funds</i>		
Notes receivable .....	38,138	40,308
Total, all funds .....	<u>\$11,089,622</u>	<u>\$9,873,408</u>

#### 5. Endowment and similar funds

Endowment and similar funds at September 30, 1980, are summarized as follows:

Endowment funds, income available for:	
Restricted purposes .....	\$35,918,089
Unrestricted purposes .....	2,472,281
	<u>38,390,370</u>
Quasi-endowment funds, principal and income available for:	
Restricted purposes .....	3,592,314
Unrestricted purposes .....	22,439,628
	<u>26,031,942</u>
Total endowment and similar funds .....	<u>\$64,422,312</u>

The Institution utilizes the "total return" approach to investment management of endowment funds and quasi-endowment funds. Under this approach, the total investment return is considered to include realized and unrealized gains and losses in addition to interest and dividends. An amount equal to the difference between interest and dividends earned during the year and the amount computed under the total return formula is transferred to or from the current funds.

In applying this approach, it is the Institution's policy to provide, as being available for current expenditures, an amount taking into consideration such factors as, but not limited to: (1) 4½% of the five-year average of the market value of each fund (adjusted for gifts and transfers during this period), (2) current dividend and interest yield, (3) support needs for bureaus and scientists, and (4) inflationary factors as measured by the Consumer Price Index; however, where the market value of the assets of any endowment fund is less than 110% of the historic dollar value (value of gifts at date of donation), the amount provided is limited to only interest and dividends received. The total return factor for 1980 was \$5.00 per unit of fund participation. The total return applied for 1980 was \$2,745,992.

## 6. *Property and equipment*

Property and equipment is comprised of the following:

	<i>September 30,</i>	
	<i>1980</i>	<i>1979</i>
<i>Current funds</i>		
Capital improvements .....	\$ 1,669,476	\$ 1,342,277
Equipment .....	787,862	602,777
Leasehold improvements .....	145,229	145,229
Less accumulated depreciation and amortization .....	1,133,548	806,551
	1,469,019	1,283,732
<i>Plant funds</i>		
Land and buildings .....	12,543,726	11,920,035
Total, all funds .....	<u>\$14,012,745</u>	<u>\$13,203,767</u>

Depreciation and amortization expense reflected in expenditures of the current funds for 1980 and 1979 was \$326,997 and \$221,202, respectively.

The balance of the plant fund at September 30, 1980 includes \$3,810,063 of unexpended plant funds.

## 7. *Pension plan*

The Institution has a retirement plan in which substantially all Trust Funds' employees are eligible to participate. Under the plan, both the Institution and the employees contribute stipulated percentages of salary which are used to purchase individual annuities, the rights to which are immediately vested with the employees. The cost of the plan for the year ended September 30, 1980 was \$2,072,520. It is the policy of the Institution to fund plan costs accrued currently. There are no unfunded prior service costs under the plan.



## 8. *Income taxes*

The Institution is exempt from income taxation under the provisions of Section 501(c)(3) of the Internal Revenue Code. Organizations described in that section are taxable only on their unrelated business income. The Internal Revenue Service is presently considering a request for technical advice pertaining to whether income derived from several of the Institution's activities is subject to tax as unrelated business income. If the Institution's position is upheld, no tax would be imposed on this income.

It is the opinion of the Institution that it is also exempt from taxation as an instrumentality of the United States as defined in Section 501(c)(1) of the Code. Organizations described in that section are exempt from all income taxation. The Institution has not yet sought such dual status.

Management believes that any income taxes required as a result of settlement of these matters would not have a material effect upon the financial position of the Institution.



Scrutinizing fossil remains of *Callixylon*, one of the world's earliest trees, exhibit staffers check construction progress on *The Conquest of Land* in the National Museum of Natural History's new paleontology hall. This ancient tree was mistaken for a petrified snake when it was first dug up in Oklahoma at the turn of the century.



## SCIENCE

DAVID CHALLINOR,  
ASSISTANT SECRETARY FOR SCIENCE

### *Chesapeake Bay Center for Environmental Studies*

A major goal of the research conducted at the Chesapeake Bay Center for Environmental Studies (CBCES) is to develop a comprehensive picture of the dynamics of an estuarine watershed system, including detailed documentation of the ways in which changes in human and natural use of the land affect plant and animal life in receiving waters. Long-term and comparative studies of the Rhode River estuary and its air- and watershed on the Chesapeake Bay are producing a number of significant findings.

#### *AIRSHED AND WATERSHED STUDIES*

Several aspects of the chemistry of precipitation have been intensively studied since 1973 in order to measure the effects of atmospheric changes on the ecosystem. Trend analyses of the acidity of precipitation during the spring and summer seasons show a one-hundred-fold increase between 1974 and 1979 to a pH of 3.8. This increase, due to nitrogen and sulfur oxides in the atmosphere which form acids when dissolved in rainwater, is beginning to produce significant effects on the Rhode River ecosystem. Since 1979, the average acidity of the winter and spring stream waters which drain the watershed has increased eight fold to a pH of 5.5. Studies conducted elsewhere show that at acidity levels of pH 6.5 the egg mass and juveniles of many freshwater fish and amphibians begin to be adversely affected. Coupled with this effect is the fact that the more

acid waters will leach out higher concentrations of toxic metals from soils, thereby possibly causing indirect effects on the biota.

Studies of the herbicides in precipitation suggest that atrazine may travel long distances and maintain residence in the atmosphere for an extended period of time. While atrazine has been found on a regular basis in samples of Rhode River precipitation during summer months, an unexpected finding has been the detection of generally higher concentrations of atrazine in rainwater collected from the same site during winter, long after the herbicide had been applied to local crops. A total of sixty-eight rainwater samples were analyzed. A particularly sensitive instrument (a gas chromatograph equipped with a nitrogen-specific electrolytic detector) was used to detect the presence of atrazine in the samples. Atrazine residues, ranging in concentration from 6 to 190 parts per trillion, were found in the estuarine water samples. The rainwater samples were made up of particles of atrazine (lost to the air during spraying operations) settled out of the air by gravity, and vapors and particles washed out of the air by rainfall. The atrazine concentrations of these samples ranged from 3 to 2,190 parts per trillion, the highest concentrations being detected in an 0.3 inch rainfall collected during the month when atrazine is regularly sprayed in local fields.

A possible explanation appears to be that once atrazine is released into the atmosphere, it can remain there for long periods of time and/or may be carried long distances. Factors such as lower air temperature during winter months and the type of rain prevalent during that season may then contribute to the presence of higher atrazine residue concentrations in winter rainfall.

#### TERRESTRIAL STUDIES AND LAND USE

Part of the Environmental Research Program at CBCES concerns the biological effects of past and present land-use patterns. James Lynch and Dennis Whigham are in the final phase of a three-year study of the impact of forest fragmentation and isolation on bird and plant communities. Regional in scope, this research has involved the sampling of more than three hundred forest tracts in six Maryland counties. Results to date indicate that while most herbs, shrubs, and trees are resistant to the effects of isolation and reduction of total habitat area, this is not true for certain groups of



birds. Species that winter in the tropics are particularly sensitive to habitat fragmentation. Most warblers, vireos, flycatchers, tanagers, thrushes, and other highly migratory birds occur less frequently and at lower densities in smaller or more isolated tracts than in otherwise similar but larger or more contiguous forests. As an example, the mean density of the red-eyed vireo (*Vireo olivaceus*) is 50 percent higher in extensive tracts of forest (more than 100 hectares, or 250 acres) than in small woodlots (5–10 hectares, or 10–25 acres). In contrast, most resident or weakly migratory species (e.g., cardinal, rufous-sided towhee) are equally abundant in forest tracts of all sizes. The sensitivity of highly migratory species to habitat area and isolation may be an important factor in their observed decline in parks and preserves in the increasingly suburbanized eastern United States.

Other terrestrial studies at CBCES are documenting the effects of natural and human-induced disturbance on individual species. In his study of temporal shifts in the composition of ant communities, James Lynch has compared community patterns at sites representing a continuum of disturbance ranging from croplands and pastures, through abandoned fields of various ages, to young and mature hardwood forests. So far, fifty-nine ant species have been identified, approximately twenty of which have been studied in some detail. These studies have revealed that actively disturbed habitats and those recovering from human disturbance support an ant community that shares few species with forest communities. Species in old fields and other disturbed habitats tend to be more aggressive and more diurnal in their activity than species associated with undisturbed habitats. Within a given local community, the common ant species tend to differ from each other in body size, habitat, microhabitat, food preference, or in some combination of these factors. As a result, coexisting species usually exploit substantially different spatial, temporal, or material resources. Recent studies in this long-term project have documented some of the intense behavioral interactions that characterize competition in ants. By comparing ant activity at food sources where all species have been allowed access, and at food from which aggressive species have been excluded, Lynch has shown that the rate of food intake by subordinate ant species is severely reduced by the presence of more pugnacious forms, particularly at night.

A number of long-term studies are being directed towards determining the structure and functional parameters of mature and successional forests. It has been suggested that gaps in the forest canopy created by fallen trees may be the most important physical change that occurs in forest ecosystems and that the growth and spread of many species may be controlled by the size and number of gaps that are produced. Whigham, Daniel Higman, and Robert Tabisz are analyzing the responses of plants to gaps occurring in one of the older forests at the CBCES site. During the first year, densities of many wooded species increased dramatically in the study plots, but the distribution varied. The greatest increase in first-year seedlings occurred around the bases of the fallen trees.

#### ESTUARINE RESEARCH

The ecological stress caused by the entry of toxic organic substances into the Chesapeake has been monitored in various regions of the bay. In the heavily agricultural areas of the Rhode River watershed, Tung Lin Wu has been studying atrazine, a commonly used herbicide for weed control in corn. He is looking for a possible link between herbicide use and the disappearance of submerged aquatic vegetation in the bay. The project began in 1976 with a study of the temporal distribution of atrazine in Rhode River, the Choptank River, and the vicinity of the Poplar Islands in the open bay. During 1977 and 1978, atrazine was detected in the water of the Rhode River throughout the entire sampling of June through December. The maximum concentration of 3.3 parts per billion was detected in the summer of 1977 in a surface film sample collected within a heavy slick. Atrazine decreased in the Rhode River the following year, both in surface and bulk water. Concentrations in the bulk water varied from 0.003 to 0.19 parts per billion with a mean value of 0.04 parts per billion. Atrazine concentration in the surface water samples was generally in the range of 0.01 to 0.59 parts per billion with a mean value of 0.13 parts per billion.

Laboratory bioassays of atrazine toxicity to such submerged vascular plants as wild celery have shown severe adverse effects at very low concentrations. Investigations are now being made on the effects of atrazine on microorganisms that inhabit the surface film of the air/water interface.

Dennis Whigham, assisted by Margaret McWethy and John



O'Neill, is studying the ecological impact of extensive ditching on the dynamics of wetland plant communities. The focus of the research project is Maryland's Eastern Shore, where ditches are being dug along large stretches of wetlands for purposes of mosquito control. While major shifts have occurred in species composition in the ditched areas, the wetland environment appears to be resilient. An increase in primary production has been noted adjacent to ditches. Ecosystem processes such as composition and nutrient exchange are also being investigated. There have been significant increases in the concentrations and total amounts of nitrogen and phosphorus in the vegetation adjacent to the ditched areas. While no major changes in water quality have occurred as a result of the ditching processes, studies of tidal exchange are being conducted to determine if there is a net export of nitrogen and phosphorus from the ditched wetlands.

Estuaries are extremely turbid habitats, containing soil particles, detritus, dissolved organic matter, and plankton. As a result, only low levels of sunlight are able to penetrate estuarine waters, a fact which limits the productivity of estuarine plant life. Absolute levels of light penetration in any given spectral band have been found to change dramatically with these changing conditions. Intensive studies of the penetration of different spectral bands of sunlight into the waters of the Rhode River have shown shifts in their maximum sunlight penetration from blue-green to yellow to red depending upon the conditions in the water column. The solar penetration study underway has three major goals: first, to measure the intensities and spectral distribution of downwelling sunlight during different times of the year at varying depths and locations in the estuary; second, to attempt to measure the primary factors responsible for attenuation of each spectral band under various conditions; and third, to study the response of estuarine plants, e.g., pigmentation shifts or changes in the composition of species. The research is part of a three-year collaborative effort of three Smithsonian bureaus—David Correll and Maria Faust of CBCES, William Klein and Bernard Goldberg of RBL, and Jack Pierce of MNH.

Maria Faust's focus in the study is to make a comprehensive investigation of the relationships between the photosynthetic responses of unicellular attached and rooted aquatic plants. She is concerned with the ways in which sunlight interacts with algal and

bacterial populations in the water column. In order to determine the range of irradiance and color light at which specific microorganisms are able to maintain positive growth, *Prorocentrum mariae-leboriae*, an endemic dinoflagellate species of phytoplankton which forms massive algal blooms under natural conditions, was examined in the laboratory. The organism was grown under blue, green, red, and white light at three levels of irradiance. Also examined were the adaptive mechanisms of the organism, and its spectral response capability. This work suggests the *P. mariae-leboriae* is a low-light organism. Its abundance in estuarine water, therefore, is most likely due to an ability to use both low irradiances and a range of colored light more effectively than white light. This indicates that colored light (estuarine irradiance) plays an important ecological role in regulating the organism's growth. Another finding was that metabolic processes of *P. mariae-leboriae* display faster cell division in blue light and greater pigment (peridinin) synthesis in green light in response to the color of the incident light. This is known as photoadaptation. This is the first incidence of chromatic adaptation detected in the peridinin/chlorophyll of a dinoflagellate. Since *P. mariae-leboriae* in cultures of green light produces more peridinin pigment and higher cell numbers than in white light, light quality may have important biological effects in natural populations.

In the last year, the addition to the research staff of Anson Hines, an estuarine ecologist, has enabled CBCES to undertake detailed investigations of the dynamics of specific organisms in Rhode River estuary. Hines has initiated studies on spatial and temporal changes in the benthic (bottom dwelling) invertebrate communities of the estuary. He has found that approximately thirty species of worms, clams, and crustaceans constitute most of the community within the sediments of the estuary community. A considerably higher density and diversity was identified in sand in comparison with muddy sediments. A slight increase in diversity was noted towards the mouth of the river. Hines's analyses show that diversity and densities rose in the spring during the recruitment period of most species, and declined sharply during the summer, as predatory blue crabs and fish became active in the estuary. The placement of experimental predator exclusion cages in the estuary, to prevent large crabs and fish from feeding on bottom



invertebrates, resulted in an initial increase in densities of animals within the sediments. At the same time, however, two small predators—mud crabs and worms of the polychete class (nereid family)—also increased markedly in the cages, and apparently limited the abundance of many other species. Hines's analysis of the population dynamics of four species of estuarine clams in the Rhode River indicate that three of the species maintained successful settlements in the estuary, while the fourth demonstrated poor recruitment and low densities.

Hines's study of patterns of reproductive output in a wide variety of commercial and noncommercial species of crabs from the west and east coasts of North America showed proportionally similar weights between egg mass and the female crabs in all species. However, egg size and fecundity parameters that do not correlate with the habitat or taxonomic relationships of the species were highly variable between species.

In a survey conducted by Hines and Joseph Miklas of the abundance and distribution of near-shore fish throughout the estuary, menhaden, young spot, mummichog, and silverside minnows were found in greatest numbers. Another finding was that chain pickerel produced a strong year-class, and young-of-the-year were widely distributed throughout the estuary.

#### EDUCATION

Another goal of CBCES is the development of an understanding of the relationships between people and their environment. Part of this research program is concerned with environmental influences on human behavior and ways in which human preferences for various landscapes are formed. John Balling and John Falk have been exploring the effects that man's evolutionary history may have on these preferences. Underlying much of their work is the hypothesis that human evolution, in large part, took place along or near river courses in the East African savanna. Preferences for natural settings with scattered trees, short grass, and some type of water body may, therefore, reflect an innate preference for the environment in which much of our biological (and psychological) apparatus evolved.

A two-part theory of the development of environmental preferences was tested in a series of studies in which participants



A mother and her young sons (the Leidl family) share nature's preparation for winter in a living laboratory, the autumn forest. As part of the Parent and Preschooler Ecology Series offered by the Chesapeake Bay Center for Environmental Studies, families with young children explore the woods, discover ecological concepts, and play environmental games. This "hands on" program was developed by Ann Coren, CBCE's early childhood science specialist.



"rated" photographic slides of different natural environments—tropical rain forest, temperate deciduous forest, coniferous forest, savanna, and desert. First, it was proposed that there is innate predisposition towards savannalike settings that expresses itself most clearly in childhood. Recently completed research by Balling and Falk has shown that children as young as three to five years of age show a strong preference for savanna environments. Earlier data revealed that the preference for savanna persists throughout the elementary school years. Second, with increasing age and experience, familiarity with environment comes into play. Preference for savanna can be seen to decline while preference for those environments with which people are most familiar rises. Participants in studies completed to date have been most familiar with deciduous and coniferous forests. Thus, the ratings of those from the ages of mid-adolescence through adulthood indicate an equal preference for those forested settings and savanna.

This year, research on landscape preference was extended through use of an experimental overlay procedure, developed by Falk and Balling. This device allows individuals to "construct" the landscape that he or she most prefers by selecting, in turn, a preferred background and a preferred foreground. The results of studies using this apparatus tend to confirm earlier investigations. Over-all, participants selected foreground scenes containing low, even ground cover; and a few, scattered trees. Preferred backgrounds tended to be hilly, with tree density somewhat higher than that of the foreground. Almost all subjects who added additional elements drew in water of some type (e.g., streams, lakes). In general, the highly preferred scenes could be described as "park-land" adjacent to or surrounding some body of water. The natural environment that most closely approximates such scenes is the savanna. Thus, results from studies using techniques with very different types of experimental biases—judgments of slides and the overlay—have tended to support the hypothesis that there is some innate component to landscape preference.

The center is also concerned with the development of educational materials for out-of-school or informal audiences. In fiscal year 1979, a series of estuarine ecology materials entitled SEA (Smithsonian Estuarine Activities) were produced; these were targeted for young adolescents in informal settings such as nature

centers. Starting this year, CBCES began work on two other materials development projects aimed at different informal audiences—families, and parents and preschoolers.

A goal of the center is to develop ways to help today's parents function effectively in their role as educators of their children. While a child may spend some twenty-five hours per week involved in classroom learning, the majority of the child's waking hours are spent away from the school grounds. Parents, then, have a substantial opportunity to explore with their children the world around them, to teach them how to make decisions, and to help them make the connections between what they learn in the classroom and what happens in their everyday world. The rapid scientific and technological change of today's world often severely limits this opportunity, however, leaving an ever-widening gap between what most parents can impart to their children and the science in actual use around them.

The Smithsonian Family Learning Project (SFLP) is an effort to strengthen the family as a significant teaching-learning unit. Under the direction of John Falk, staff members Jamie Harms, Sharon Maves, and Laurie Greenberg are developing a series of learning activities—for families to do together at home—which focus on the home environment as a functioning ecosystem. To date, activity packets have been developed and tested in three areas: home energy use; houseplants; and lawns. Included in each packet are games, experiments, and explanatory projects that provide the tools for families to discover the dynamics of these systems in their home environment. In one of the activities, families learn about solar energy by constructing a solar greenhouse. In another, families explore the critical variables of heat, light, water, and other environmental requirements in the growth and productivity of individual houseplants.

A complementary project to SFLP is the Parent and Preschooler Ecology Series. In a preliminary stage of development, the series is being designed by Ann Coren to help families and their young children work in partnership to learn basic ecological principles. Materials are being developed that will enable parents to capitalize on the preschool child's natural curiosity. As in SFLP, an essential element of the process of testing the materials is a pilot workshop format wherein small groups of parents and children work as a



family team using "hands on" exploratory activities as a framework for discovery. Two outcomes have been identified in sessions conducted to date: children learn ecological concepts through exploration and manipulation of the environment; and the experience of shared discovery reinforces the teaching/learning process for both parents and children. These results suggest that family-based activities such as the Parent and Preschooler Ecology Series and SFLP can initiate a lifelong pattern of family learning.

#### INFORMATION TRANSFER

Information Transfer is the component of the Education Program which seeks to determine ways to increase the understanding and use of scientific information in environmental planning and management decisions. During the past year, John Balling and Suzanne Pogell have looked at several aspects of the roles of psychological theory and public participation in the resolution of potential conflict and in improvement of the decision-making process. In papers presented both at the annual conference of the Environmental Design Research Association and at this year's Environmental Law Conference, Balling proposed the use of linear decision models as means of arriving at effective and representative decisions.

Such models can be used to facilitate the decision process by making the parameters underlying the decision explicit and open to public scrutiny. They also provide a method for potentially avoiding inconsistencies and biases in human judgment, such as the tendency to consider one's own experience as much more representative than it actually is. Although it is not necessary for their utilization that these models be computer-based, if they are they allow decision makers to manipulate many variables simultaneously to receive rapid feedback on the results of different decision strategies, to display the information in an easily comprehended form, and to integrate information from many different sources in a fair way. Balling argued that although linear models have rarely been used to facilitate environmental decisions, it would be quite natural to extend them to help the resolution of environmental conflicts that generally involve complex issues and contrasting values.

Pogell, in a proposed conceptual framework for a Chesapeake Bay information network, and in a number of recent publications

and presentations, suggested several bases for considering the participation of an informed public in the formulation and implementation of environmental policy. Specifically—early, open, and continued public access to useful information, the decision makers, and the decision-making process has a positive effect on both the political process and the management of the physical environment. Timeliness, accuracy, brevity, clarity, and translation of technical terms into lay language are elements offered as basic to “useful” information.

Additionally, Pogell suggests a number of specific outreach mechanisms for fostering informed participation by two distinct groups: those who can be expected to be interested and involved, and those who by virtue of economic, social, or geographic isolation remain unserved through traditional channels of information and access. Training in awareness and leadership is one of these mechanisms. Another is use of the news media to establish avenues of communication between sources of information and target publics. A third is initiation of public participation opportunities at the community level.

### *Fort Pierce Bureau*

The Fort Pierce Bureau, located on the central east coast of Florida, is in a zoogeographic transitional zone which offers an unrivaled opportunity for study of a unique complex of both temperate and tropical plants and animals. On an estuarine lagoon near the Atlantic Ocean, the facility is within easy reach of a wide diversity of habitats ranging from the mangroves, sea-grass beds, and mud flats of the Indian River to the sandy beaches and worm reefs of the oceanic coast and the coquinoid limestone ledges, oculinid coral reefs, and shell-hash plains of the nearby continental shelf. The Florida Current with its rich supply of planktonic larvae is readily accessible several miles offshore. Research at the Fort Pierce Bureau emphasizes studies of the life histories, systematics, and ecology of a wide spectrum of marine invertebrates. Contributing to the research efforts are resident scientists, postdoctoral fellows, and numerous national and international visiting investigators. The Reference Museum houses 14,000 catalogued specimens represen-



tative of local marine flora and fauna. Facilities include small boats for work in the Indian River lagoon and the nearshore oceanic waters, and an electron microscope laboratory with both scanning and transmission microscopes. Limited laboratory space is available for visiting scientists.

The Life Histories Program of the Fort Pierce Bureau, under the direction of Dr. Mary Rice, stresses studies on both reproductive and larval biology of marine invertebrates of the Indian River lagoon and offshore continental shelf. Emphasis is on the clarification of systematic problems and an understanding of phylogenetic relationships among marine invertebrates. At the same time, baseline information is accumulated on critical stages in reproduction and development that is potentially useful in assessments of environmental stresses and changes on populations of marine organisms. During the past year, various aspects of reproduction and larval development have been studied in sipunculans, echinoderms, crustaceans, and mollusks.

In continuing studies of life histories of sipunculans, development of several species has been examined and compared in the laboratory. One species, *Golfingia pellucida*, was reared from egg to juvenile worm. This is the first time that any sipunculan with a planktotrophic larval stage has been successfully reared through metamorphosis.

A comparison was made of early development of two populations, presumed to belong to the same species, *Golfingia misakiana*. One was from a population collected from a depth of 50 to 80 meters on the continental shelf near Fort Pierce, Florida. The other, probably from the Caribbean, was reared in the laboratory from larvae collected in the Gulf Stream offshore from Fort Pierce. Adults of the two populations show minor difference in morphological characters. Developmental characters were found to differ in size of eggs, position of arrested metaphase spindle, pigmentation, and developmental chronology. Several hybrid cultures were reared through early development. Developmental characters of the hybrids resembled those of the female rather than the male.

A concentrated effort was made to rear *Golfingia misakiana* through its entire life cycle. Larvae collected from the plankton were reared to sexually mature adults; young larvae from spawning of these adults were reared to an age of three months during

which period they assumed many features of the oceanic larvae. All attempts to induce metamorphosis failed. Young larvae were subjected at regular intervals to conditions known to induce metamorphosis in older larvae—without positive results.

In ongoing studies of the systematics, morphology, and metamorphosis of oceanic larvae, plankton collections were made at monthly or bimonthly intervals from the Florida Current off Fort Pierce. Oceanic larvae collected from surface plankton were reared to identifiable juveniles. Larvae not heretofore identified were two species of *Sipunculus* and one of *Siphonosoma*. Metamorphosis of the *Siphonosoma* was studied in sectioned and fixed material.

The first demonstration of nervous control of metamorphosis in animals was made by postdoctoral fellow Robert Burke in his research on two species of sea urchins from the Indian River lagoon. Dr. Burke investigated two problems of larval metamorphosis of sea urchins: (1) the means by which larvae perceive cues for metamorphosis, (2) internal mechanisms of the larvae for the induction of metamorphosis. In an electron microscope study of larval appendages he demonstrated specialized sensory organs for testing substrata. The role of the larval nervous system in inducing metamorphosis was shown by the metamorphic response to stimulation of nervous tissues by microelectrodes and to treatment of larvae with specific neurotransmitter substances.

Visiting investigators have contributed to the research efforts of the Life Histories Program by studies on reproduction of kinorhynchs, phonorids, bryozoans, echinoderms, and gastropod mollusks. An interest by several visiting scientists in the oceanic larvae of the Florida Current has produced studies of feeding activity, respiration, regeneration, and tissue differentiation.

Research in crustacean biology, directed by Dr. Robert Gore, comprised aspects of the systematic, ecological developmental and zoogeographical biology of decapod and euphausiid crustaceans from the Indian River and related tropical regions. These investigations are part of a continuing research program by the Fort Pierce Bureau on the taxonomy, distribution, and evolutionary relationships of shrimps, crabs, mantis shrimps, and krill in the tropical western Atlantic and eastern Pacific oceans.

Studies on larval development were carried out on decapod crustaceans collected locally, and from other zoogeographical areas



in the southern Caribbean Sea. In the Brachyura, the first five larval stages were obtained in laboratory culture of the coral-gall crab, *Troglocarcinus corallicola*, a species collected from offshore oculinid coral reefs. This marks the first time that the larvae of any member of the family Hapalocarcinidae has been studied in depth. Larval development in the family is otherwise unknown, and the group is so taxonomically confused that its phylogenetic position has not yet been clarified within the brachyuran Decapoda. Preliminary evidence from the larvae, however, tends to confirm suggestions made by earlier systematists, that the family is near the Pinnotheridae, the commensal pea crabs. Another coral-associated brachyuran crab, *Micropanope barbadensis*, was successfully cultured under laboratory conditions, the first time the complete larval development has been determined for any member of this xanthid genus. Both *Mithrax forceps*, a species of spider crab found on inshore coquinoïd ledges off central Florida, and *M. corphyæ*, collected in intertidal grassbeds of Colombia, South America, were also successfully reared to completion.

In the Anomura, larvae and postlarvae were obtained from *Pylopagurus holthuisi*, a small hermit crab collected east of the Fort Pierce Inlet. The genus *Pylopagurus* is presently being extensively revised by other workers, and larval studies should provide much aid in determining relationships among the as yet to be defined new genera. A single stage-one zoea in the family Albuneidae, collected from the plankton, also completed its development in the laboratory. On the basis of postlarval characters the species was identified as the sand crab, *Lepidopa richmondi*, a species for which the adults are as yet unreported from the Indian River region, although they are known from several localities in the Caribbean Sea.

Scanning electron microscopy has proved to be a valuable tool in several areas of study. Scanning electron micrographs (SEM) were obtained of the gonopods in many of the locally occurring species of mud crabs in the family Xanthidae. The morphological differences exhibited in these appendages have proven useful in distinguishing among the species and will be of aid in the identification of taxa in this widespread and often taxonomically confusing family. In other studies, SEM of decapod larvae have been made in order to elucidate minute surface structures not visible in ordi-

nary light microscopy. SEM has also been used to study an interesting taxonomic problem concerning the euphausiid genus *Stylocheiron*. Four species, differing primarily in the number of facets in the upper half of bilobed compound eye, have reproductive organ morphologies which do not differ significantly one from another. This suggests that the four forms are really a single polymorphic species in which general morphology changes according to habitat (i.e., depth) and/or body size.

As part of the Indian River Coastal Zone Museum's attempt to incorporate as many species of the regional fauna as possible in its collections, studies on a previously unrepresented group, the euphausiid crustaceans, are presently being completed. Commonly known as krill, these small shrimplike forms constitute a major component of the offshore plankton. The group was last studied in this area in 1926, although more recent surveys have been conducted off Miami and the Gulf of Mexico to the south. Samples taken during a 1974 cruise of the research vessel *Gosnold* contained twenty-four species in five genera. This information will be used in studies surveying the euphausiid fauna along the entire eastern Florida coastline, in conjunction with the SEM investigations mentioned earlier.

Studies in systematic zoology presently underway or completed include a review of the genera of coral-gall crabs (family Haplocarcinidae) in the Atlantic, a questioning of the taxonomic validity of the oxrhynchous crabs as a natural grouping, and descriptions and taxonomic relationships of several new brachyuran crab and caridean shrimp species from either the Indian River region, the Florida Keys, or the southern Caribbean Sea. Several of these studies have been the result of cooperative efforts involving visiting investigators from both national and international institutions.

The postdoctoral program was directed toward histological and ultrastructural studies of the connective tissue surrounding the digestive epithelium of two commercially important decapods, the adult stone crab, *Menippe mercenaria*, and the American lobster, *Homarus americanus*. Investigations by postdoctoral fellow Dr. Jan Factor have also been conducted on the development and metamorphosis of the digestive system and feeding apparatus of the stone crab. Morphological evidence suggests that the function of the mastication of food shifts from the mandible to the gastric



mill when the crab molts to the megalopa. These morphological changes correspond to the transition in environment, and presumably diet, which takes place at metamorphosis, when the stone crab settles out of the plankton and begins benthic life.

Postdoctoral studies by Dr. Jack McDonald were completed on niche differentiation, and aspects of reproductive physiology and ecology in sympatric species pairs of xanthid mud crabs, producing data on fecundity, breeding cycles, survivorship, and recruitment of larvae within the estuarine lagoon.

The Reference Museum at the Fort Pierce Bureau, initiated in 1972 during the original baseline survey of the Indian River Coastal Zone Program, has developed into a quality collection of more than 14,000 catalogued lots. The majority of specimens have been collected from the Indian River lagoon and the adjacent continental shelf waters.

The major taxa are represented by animals identified to the species level; included are major holdings in fishes, crustaceans, echinoderms, annelids, and mollusks. New taxa are added regularly and a limited amount of paratypic material is maintained on site. All collections are processed on a routine basis involving preservation, identification, and cataloguing of the reference material, plus maintenance of a continually updated computerized species list. The collections are of special interest because they encompass species from the zoogeographic transition zone that exists between the tropical West Indian fauna to the south and the warm-temperate Carolinian fauna to the north. The holdings have been of value to full-time staff members as well as to visiting scientists and pre- and postdoctoral fellows. As a working reference collection, much of the material is available to qualified investigators on short- or long-term loan for examination or research projects. In special cases, duplicate material may be borrowed indefinitely or reciprocally exchanged.

Research on foraminifera at the Fort Pierce Bureau, directed by Dr. Martin Buzas of the National Museum of Natural History, is concerned chiefly with ecology of benthic foraminifera. Their distribution in both time and space is being documented, and through field observations and experimentation, the observed patterns are being related to abiotic and biotic variables.

In the Indian River exclosure experiments were conducted to

determine the effect of predation on foraminifera. The experiments showed that densities of foraminifera were reduced greatly through predation by macroorganisms. A survey of the gut contents of many macrofaunal organisms from the Indian River indicated that many deposit feeders, including some fish, ingest foraminifera. This demonstrated the importance of biotic control on foraminifera densities.

Seasonal variation of foraminifera densities occurs in the river, and some interplay between biotic and abiotic variables seems likely. To assess the role of abiotic variables, foraminiferal densities were enumerated for eight months at two sites. These sites are adjacent to areas where a Nutrients and Trace Metals Chemistry Group was monitoring chemical variables in sediment pore water. Preliminary observations suggest increases in foraminiferal abundance are triggered by increases in temperature and salinity. To test this, laboratory cultures of *Quinqueloculina impressa* were subjected to these conditions and the increase of these variables did seem to stimulate reproduction. The number of young produced during multiple fission was found to vary greatly, from 10 to 430, with an average of about 50.

To document the large-scale distribution of foraminifera in the Indian River, replicate samples were taken throughout the length of the river, and the living foraminifera were sorted to the species level. There is an overlying trend of increasing diversity toward the southern portion of the river, as well as a concentration of higher diversity stations near the inlets. The overlying trend may be explained by decreasing thermal stress to the south, and the increased diversity near the inlets may be the result of increase exchange with open water foraminifera.

Foraminiferal populations are also being studied on the continental shelf. In an offshore experiment, exclosures containing azoic sediment and covered with a 1 mm mesh screen have been placed at depths of 32 m, 121 m, and 187 m. Preliminary analysis shows differences in density between the exclosures and the controls to be smaller than in the river, suggesting that macrofaunal predation is less important in controlling foraminiferal densities offshore. In these experiments the azoic sands were colonized rapidly but the species composition differed from the control areas, suggesting that succession may be occurring.



While examining the control samples from these offshore experiments a large spatial variation in the foraminiferal population was observed. Subcores taken from the same 0.10 m<sup>2</sup> sample frequently showed a 300 percent variation in total numbers of living foraminifera. To determine if this is a common, or perhaps a seasonal, occurrence, a sampling program was initiated at depths of 121 m and 187 m. Preliminary data suggests spatial variation is much greater than anything observed in the river. This is unexpected because the offshore ocean floor appears uniform over short distances, especially when compared to the more dynamic Indian River.

An experiment designed to measure the effect of catastrophic burial on foraminifera demonstrated that the time required for a foraminifer to emerge from a given burial depth is proportional to the square of that depth. From this it may be inferred that foraminiferal velocity through the sediment is inversely proportional to the depth of the sediment. If movement is required for survival, then burial can be tolerated only to some finite depth, an important consideration in areas where the sediment is distributed by such events as storms or dredging.

Smithsonian postdoctoral fellow Dr. Malcolm Erskian is studying the dynamics of spatial patterns in benthic Foraminiferida with Dr. Buzas. The arrangement of individuals is a fundamental characteristic of biological populations. Patterns of dispersion provide meaningful information about community structure and the interaction of species within the community. These spatial patterns are dynamics, affected by the interaction of biotic and physical factors. *Quinqueloculina impressa* is the dominant foraminiferan in the sea grass, *Thalassia testudinum*, community at Fort Pierce. Population densities are seasonal with large numbers of individuals produced in the spring. Seasonal changes in population density produce spatial patterns which differ in age-size structure and habitat during the year.

Through these studies an understanding of many facets of foraminiferal ecology is emerging. Predation, physical-chemical variables, and physical disturbance all affect the structure of the foraminiferal community. Assessing the importance of these variables in given environmental regimes eventually will lead to an ability to predict the outcome of changes in the environment.

Dr. Richard S. Houbrick of the National Museum of Natural History has focused his research at Fort Pierce on two prosobranch snails of the family Potamididae. These two species, *Cerithidea scalariformis* and *Batillaria minima*, are estuarine snails that lead an amphibious life at the high water mark. Studies are now underway on their anatomy, reproductive biology, and ecology.

Dr. David Pawson of the National Museum of Natural History, and Mr. John Miller of the Harbor Branch Foundation, Inc., continued their research on the systematics, ecology, and development of echinoderms. Using the research submersible *Johnson-Sea-Link*, dives were made on a quarterly basis to investigate the ecology of sea cucumbers and sea urchins associated with *Oculina* coral reefs. These reefs, abundant off central-east Florida in 60 to 90 meters, provide an excellent habitat for numerous species of marine invertebrates.

Ongoing studies concerned with the systematics of sea cucumbers from the western Atlantic and the Gulf of Mexico have been beneficial in uncovering several new species and increasing our knowledge of the zoogeography of holothurians. Photography of species-specific body wall ossicles, using the scanning electron microscope, has provided much new information on the skeletal composition of these animals. Data obtained from these investigations is being compiled for a monograph on the shallow-water holothurians of the western Atlantic.

Isolated populations of the sea urchin *Lytechinus variegatus* frequently appear morphologically distinct. In an attempt to determine whether these morphological differences are controlled by genetic makeup or by environmental factors, the development of laboratory-reared juveniles has been followed throughout the past year. Several external characters, including coloration, horizontal diameter, spine length, types of pedicellariae, and time of gonopore development are examined regularly. Preliminary evidence strongly suggests that the varying external characters are genetically controlled. Upon reaching sexual maturity, experiments in cross-fertilization will be conducted to determine whether or not these isolated populations might be distinct at the species level.



## *National Air and Space Museum*

The National Air and Space Museum (NASM) has made significant progress in every area of its five-point program of research, exhibits, collections management, education, and public service.

During fiscal year 1980 the museum made additional effort to address adequately the knowledge derived from recent space science activity. A new department, Space Science and Exploration, was created early in 1980 to be a focal area for the space-related research, curatorial, and archival activities of the National Air and Space Museum. Working with the NASM collections as well as archival and bibliographic sources, the new department will investigate the disciplines that use the vantage point of space, including astronomy, physics, atmospheric sciences, communications, and life sciences, and the means by which human beings have probed or stepped into space, including rockets, launch vehicles, and spacecraft.

Research in this department will comprise historical studies of space science and exploration, technical surveys of space disciplines and technology, and selected scientific researches in the disciplines, when desirable and possible. In addition, the department is undertaking appropriate historical studies of the social, cultural, economic, and political aspects of spaceflight and exploration. The primary emphasis of the department is on historical research, but it will also monitor and record the present achievements of spaceflight and space-related technology, acquire significant artifacts, and document those achievements and artifacts for public exhibition, study, and reference.

The Space Science and Exploration Department has been in the process of adding personnel in areas where additional research strength is perceived to be needed. It has, in addition, continued to work on two important exhibit areas—solar energy and satellites. Much of the effort of the new department has gone into establishment of policies and definition of programs and positions needed to fulfill these programs. Interpretive astronomy and studies in ethnoastronomy are underway by the department's astronomer. From January through June, the department sponsored the 1980 lecture series "Exploring Space with Astronomers," which had been offered previously through the Presentations Division.



Cyndi Birch, 1980 women's Frisbee champ, demonstrates an under-the-leg catch at NASM's Fourth Annual Smithsonian Frisbee Disc Festival held August 31 on the National Mall. The event attracted more than 10,000 people, fifteen Frisbee Disc champions, and two disc-catching dogs.



The Center for Earth and Planetary Studies (CEPS) has concentrated on lunar photogeology, comparative planetology, and terrestrial desert features and processes. The extensive collection of planetary photography was expanded by the addition of newly available photographs from the Viking and Voyager missions.

Research on the origin of lunar impact and volcanic features concentrated on the ancient cratered terrain of the farside highlands. On the basis of distribution and age of craters larger than 25 km, it was found that extensive areas of the lunar farside may have been modified by large, basin-forming impacts. In another study of the relative age of light-colored plains, the oldest plains were found to occupy the floors of farside basins, as do the nearside basins with their volcanic fill. These units may represent one of the earliest stages of lunar volcanism. The morphology and study of eruption of Ina, a D-shaped depression on the lunar nearside, also was investigated.

As part of an ongoing project to study the distribution and origin of structurally formed ridges on the surfaces of the terrestrial planets, a comparison was made between ridges in the Caloris basin on Mercury, and ridges in lunar basins. As a result of this study, it was found that deviations from basin-controlled orientations in lunar basins indicate the effect of global-scale compression, resulting from early cooling of the moon.

Research on the landforms of Mars consisted of studies of crater characteristics based on Viking images, and on comparisons of desert features on Mars with those in the Western Desert of Egypt. Martian craters are being examined to determine their distribution on different terrain types, as well as the influence of local and regional structural patterns on their shape and orientation. In addition, previous research at CEPS has shown that light and dark wind-formed streaks in the Western Desert are similar to those visible in Viking Orbiter images of Mars. The terrestrial streaks are formed by the characteristic pattern of windflow and sediment deposition around large hills and mountains, and continue to provide information about martian geologic processes.

Study of deserts expanded as CEPS director, Dr. Farouk El-Baz, represented the Smithsonian Institution in a delegation of United States desert specialists visiting China's northwestern territories during August 1979. The visit was sponsored by the National

Geographic Society and Beijing's Academia Sinica. The eight-member delegation visited parts of the Gobi Desert, the Tengri Desert, and the Dzungarian Desert, in northeastern, north-central, and northwestern China, respectively.

Research in the Aeronautics Department has followed traditional lines in that it has resulted in exhibits, publications, and the compilation of data relating to the restoration of artifacts. In addition, significant progress was made in collections management.

Two additions to the Famous Aircraft of the National Air and Space Museum series were published: *The P-80 Shooting Star*, by E. T. Wooldridge, Jr., and *The Albatros D. Va* by Robert C. Mikesch. The biennial publication *Aircraft in Museums Around the World* was also completed and distributed.

A great deal of archival material was added to the computerized index. Sorting of the research files at the North Capitol Street warehouse has begun, with some duplicate and otherwise unnecessary material being disposed of. A complete index of the technical reports from McCook and Wright fields has been prepared as have slides from many of the color transparencies in the collection. The slides will be accessible for public viewing while the transparencies will be stored under controlled conditions.

In October, the museum sponsored a symposium entitled *Forty Years of Jet Aviation*, featuring many of the seminal contributors to the jet age—Sir Frank Whittle, Dr. Hans von Ohain, Brigadier General Charles Yeager, USAF (Ret.). In conjunction with this symposium, the museum published *The Jet Age*, edited by Walter J. Boyne and Donald S. Lopez, representing all of the symposium lecturers as well as supporting material. As an interesting sidelight, one article from this book has been widely reprinted in the People's Republic of China in Chinese as a text for engineers.

The museum has made a major effort to ensure that scientific research is integrated across the broad spectrum of museum programs, and has sought to integrate the efforts of several departments to achieve results in each of the major programs. As a single example, the museum plans an exhibition on energy from the sun. The creation of this exhibition will involve the Center for Earth and Planetary Studies (for over-all responsibility), the Department of Aeronautics (for structures, windmills, wave energy, and solar-powered aircraft), the Department of Space Science and Exploration



(for energy in space, application in transportation), the Exhibits and Presentations Division and Production Operations Division (for design and construction of exhibits), the Education Services Division (for a briefing room presentation, curriculum materials on energy awareness, and tours centered on the exhibition) and Collections Management (for selection, preservation, and exhibition of artifacts).

From this joint effort multiple products will derive. We expect publications in the form of monographs, gallery guides, and other books, and a series of lectures by various members of the staff. We also expect that the public will be prompted to consider the full ramifications of the energy shortage and the opportunity cost of the various alternative approaches to solution of the crisis.

The Education Services Division moved into new quarters directly underneath the Milestones of Flight Gallery, and expanded its diverse public services program. "The Briefing Room," a specialized area where interactive programs between staff and the public are conducted, was completed, as was the Teacher Resources Center, a facility for dispensing audiovisual and printed teaching material relating to air and space. A special advantage of this facility is that teachers may, with the assistance of staff personnel, tailor their own courses with available material.

NASM, one of the most accessible public buildings in the world for the handicapped, extended its range of services in preparation for the International Year of the Disabled Person. A complete series of thermoform raised-line models was made of major artifacts. These serve as tactile demonstrations of objects whose size or position make them inaccessible to the blind. Complete scripts of audiovisual exhibits were prepared for the hearing impaired.

Multicultural efforts were continued with publication of the proceedings of the 1979 NASM multicultural conference and the planning of the "Multicultural Heritage" night in 1980, an event illustrating the success women and minorities have had in the aerospace field.

*Air and Space* magazine completed its third year of publication. While single-copy distribution is limited to 30,000 educators, studies indicate that pass-along readership approaches 500,000 per issue.

The Education Services Division is engaged in numerous other programs—publication and distribution of museum-related film-

strips, assistance to other museums, and so on—but it makes its most direct contribution to the public in terms of the thousands of visitors who receive specially devised tours.

Collections Management has become a focal point for every manager at NASM, and this was confirmed by the issuance of an over-all Museum Collections Management Plan covering the acquisition, disposal, storage, loan, inventory, and protection of artifacts. The major collecting departments developed individual plans to review their existing collections and to determine what new acquisitions will be made.

The importance of Collections Management was underlined this year by a number of events and new endeavors, perhaps the most notable being dedication of the Paul E. Garber Preservation, Restoration, and Storage Facility in Suitland, Maryland. Named for Mr. Paul E. Garber, Historian Emeritus of NASM, the facility was dedicated formally on the occasion of the distinguished historian's sixtieth anniversary with the Smithsonian Institution.

The Garber Facility acquired a significant new capability with two large temperature- and humidity-controlled storage areas for space suits, pressure suits, works of art, and other items susceptible to damage from the ordinary environment.

The loan program, a vital part of Collections Management, continues at a high level of activity; 1,567 artifacts are on loan to 185 museums in the United States and abroad.

NASM received an award from the Atherton Seidell Foundation for a pilot program in archival storage which will involve the use of video disc technology. The results of this program will be used to determine NASM's further pursuit of this technology, which promises to enhance the retrieval and review of all types of information, and the preservation of some types that do not call for high resolution reproduction.

The restoration program has continued in full operation, with the completion of the Bellanca CF, the Vought F4U-1 Corsair, the Langley Aerodrome (designed by the third Secretary of the Smithsonian Institution), and a whole series of aircraft engines.

The Exhibits and Presentations Division continued its program of providing one new major gallery exhibition each year in addition to several "mini-exhibits." This effort was complemented by an intensive renovation program for the existing exhibitions, many



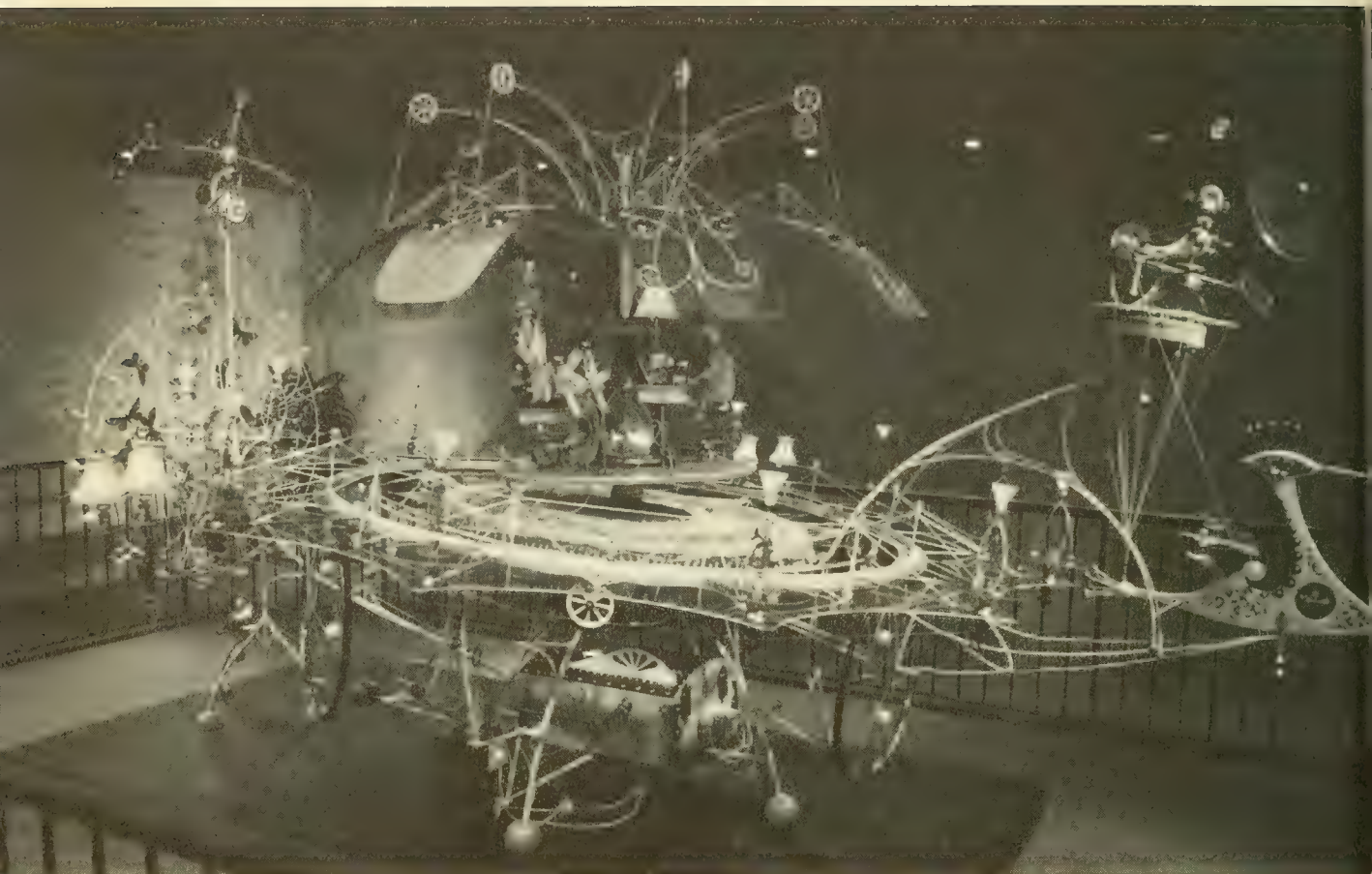
of which had begun to show signs of wear and tear after having been visited by some 40,000,000 visitors.

A major exhibition on flight history opened in March, and recreated in the Early Flight Gallery the ambiance of a 1913 aeronautical salon. The *Northrop-Douglas Legacy* in the Pioneers of Flight Gallery highlights the accomplishments of the pioneer aircraft designers John K. Northrop and Donald W. Douglas. A smaller exhibit, *Flight Attendants*, in the Hall of Air Transportation, honored the services—over the course of fifty years—of flight attendants in commercial aircraft. Rowland Emmett's *S. S. Pussywillow II* was opened to the public on March 8, 1980. This whirling, spinning, flashing, and undulating machine was installed by the artist on the mezzanine of the Flight and the Arts Gallery. Emmett describes the work as a "projected personal Air and Space Vehicle of an unusual stern-wheel configuration, with Flying carpet overtones, to be equally at home this side of Heavyside Layers, and suchlike, as well as the upper planetary reaches." An exhibition of paintings by the "old master of space art," Chesley Bonestell, was opened in June in the Independence Avenue Lobby.

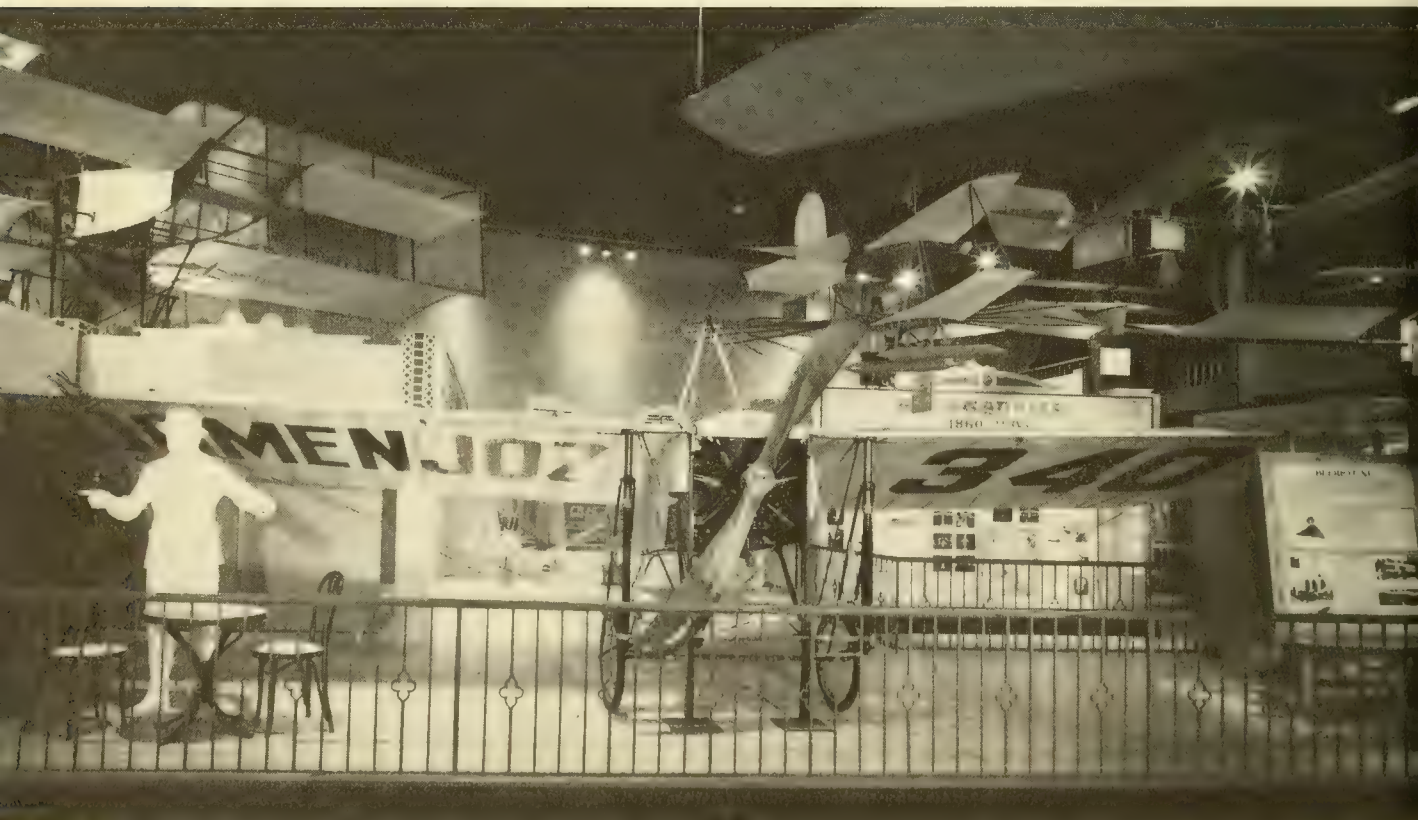
*New Eyes on the Universe* is the third production of the Albert Einstein Spacearium. The show attempts to educate the public in an entertaining style about a fundamental principle of physics—the nature of light and the electromagnetic spectrum. The production illustrates how astronomers now utilize the entire electromagnetic spectrum to help them discover new types of objects in space and understand the nature of others. Beginning with visual astronomy, the story traces the development of radio astronomy, and then presents a description of the electromagnetic spectrum. Examples of astronomical objects are then examined in different parts of the spectrum. The show ends with a film of the large Space Telescope, the first of a new generation of space observatories designed to explore those portions of the spectrum that are inaccessible from earth. Combining movies, panoramas, and slides, along with the starfield of the Zeiss projector, *New Eyes on the Universe* was produced entirely by the Spacearium staff.

The two feature films, *To Fly* and *Living Planet*, have been seen to date by 7,000,000 visitors, and continue to play to capacity audiences.

The museum public services programs have featured a large



S.S. *Pussiewillow II*, designed by British sculptor Rowland Emmett, was placed on exhibit in NASM's Flight and the Arts gallery in March. The imaginative craft is, in Emmett's words, "a projected space vehicle on an interesting paddleboat configuration with flying-carpet overtones." Below. The famous Blériot XI, shown here in NASM's new gallery on Early Flight, was the most popular pre-World War I airplane.





variety of lectures, films, and tours. An attempt is made to appeal to a large cross-section of the public and to tie in themes related to either exhibits, anniversaries, or topical events. During the year there were such diverse after-hour activities as: the summarizing of new findings about Jupiter and Saturn by Dr. Edward C. Stone in the third annual Wernher von Braun lecture; a lecture by four women who have made significant contributions to aviation; a lecture by Dr. Paul McCready, the third annual Grierson Memorial lecturer, discussing his design of the first human-powered aircraft to fly the English Channel, his *Gossamer Albatross*; two different series of lectures on astronomical subjects, one held at noon, the other in the evening; two different feature film series, one on aviation and the other on space science; and finally, in what has become a NASM tradition, the annual Frisbee Festival.

The National Air and Space Museum received several important donations, including the Andrew G. Haley and Juan Terry Trippe collections. The library also provided editing and compilation services in completing the Aeronautics Department's *Directory of Aerospace Resources*.

On May 7, 1980, Secretary Ripley presented the third annual Robert A. Brooks Award to Walter J. Boyne, Assistant Director for Resource Management and Operations.

### *National Museum of Man, Center for the Study of Man*

#### NATIONAL ANTHROPOLOGICAL FILM CENTER

The National Anthropological Film Center (NAFC) was established to provide a means to develop, study, and preserve visual data resources on vanishing and changing ways of life and culture, of the world. The principal work of the Film Center is retrieval, preparation, analysis, and preservation of visual data, and the internationally integrated collaborative effort that this work requires.

At present the budget of the NAFC is devoted almost entirely to Visual Data Resources Development. Insufficient funding and facilities have limited activity in film analysis, equipment and systems design, and information/education as increasingly rapid disappearance of traditional lifeways in the world has made attention to gathering visual data more urgent. The current emphasis also

follows the recommendations of the Advisory Council to the NAFC and responds to this council's concern that "the salvage situation is desperate and will become increasingly so."

Although the NAFC's mandate in the granting area is limited for reasons of practicality and economy, the Film Center seeks out and develops collaborative assistance projects with a variety of human studies experts and anthropologists throughout the world. Two major programs—the Collaborative Program Assisting Third World Nations and the Collaborative Program Assisting Ethnofilmers and Scholars—provide supplementary assistance to established research filming projects, including film stock, equipment, indexing and annotation aid, grant proposal assistance, and other services as possible. Even though the NAFC has had only partial basic funding for three years, it has provided supplementary assistance to thirty-eight ethnofilmers and scholars.

Guided by an outreach philosophy embracing the variety of schools of thought dealing with visual data retrieval and analysis, the NAFC engages in collaborative Visual Data Resources Development with counterpart scholars and leaders in different institutions, disciplines, nations, and cultures. In doing so the NAFC is governed by the belief that filming guided by the varied sense of problem and belief emerging from different scholarly and cultural approaches will provide the broadest and richest range of visual data for future scholars.

The Collaborative Program Assisting Third World Nations (PATW) is binational and interinstitutional. In keeping with present world requirements, it touches on many cultures and incorporates the different approaches of different disciplines and different nations. To date it has assisted in the development of urgent visual data retrieval projects in India, Nepal, Papua New Guinea, Polynesia, Micronesia, Tibet, Afghanistan, and Brazil; and it has participated in planning surveys in Sudan and Pakistan. All PATW projects are fully collaborative with counterparts from the human studies professions and from the host countries. As part of this program, individuals from the countries or cultures involved are located and trained to take part in the filming.

In order to provide the broadest possible latitude for independent scholarly development of visual data resources on vanishing lifeways, the NAFC has begun the Collaborative Program Assisting



Ethnofilmers and Scholars (PAES) to experiment with various kinds and levels of support to ethnofilmers and scholars who have a clear interest in contributing to the National Anthropological Film Collection. We have found that support can require anything from consultation alone to intermediate forms of assistance such as providing equipment, film stock, processing, logistic help, training, assembly and annotation services, grant application assistance, preservation service, and facilities for analysis.

In implementing the PAES program the NAFC is also guided by the philosophy that many minds and many ways of doing things can contribute to an ultimately richer research resource. The NAFC thus implements the PAES very broadly. It is normally required, however, that projects be approved by the appropriate department in a recognized institution of higher learning and (when appropriate) have received review by a foundation employing a peer review system. PAES support must also be approved by the Advisory Council to the NAFC and the reviewing bodies of the host nations.

Advice on potential collaborative situations comes through contacts of a variety of kinds: contact with professionals familiar with the scholarly human studies work going on in the different parts of the world; discussions at professional meetings; and contacts with responsible scholarly institutions in Third World nations.

Visual data preparation and preservation lies at the base of all the efforts of the National Anthropological Film Center. Without working up the obtained visual data as an accessible and permanent scholarly resource, the research value of this data becomes minimal.

The Program of Visual Data Preparation and Preservation is based on the generally accepted belief that the usefulness of visual data records increases with: (1) preserving the full footage; (2) preserving details of time and place, and maintaining the original time continuity; (3) knowledge of the purpose and guiding rationale behind the filming work; (4) knowledge of the filmer's professional and cultural orientation and personal predilections; (5) background information on the events, people, communities, and cultures filmed; (6) knowledge of circumstances not seen in the film which might have affected the events or activities that are seen; (7) explanations of the significance of the filmed events by members of the communities or cultures filmed and by trained experts; and (8)





Tibetan women irrigating a field in Mathoo Village, Ladakh, in western Tibet, are documented by Ragpa Dorjee Lama of the National Research Film Collection. *Below.* A Tibetan Opera Company performance is filmed in South India by Mr. Dorjee, NRFC research film specialist. (Photos by Dr. E. R. Sorenson.)





indexing and cataloguing. When the Film Center assists a filming project, it requires that a means be established by which the information listed above will be obtained and keyed to the film footage obtained. The ultimate objective is to preserve such information together with the visual record within the National Anthropological Film Collection.

#### RESEARCH INSTITUTE ON IMMIGRATION AND ETHNIC STUDIES

The Research Institute on Immigration and Ethnic Studies (RIIES) has maintained its efforts to facilitate and promote the study of contemporary immigration in its effect upon the United States and the international community and its discernible implications for the future. With the publication of two volumes, *Sourcebook on the New Immigration: Implications for the United States and the International Community* and *Supplement to the Sourcebook on the New Immigration* (reflecting the proceedings and the preliminary deliberations for the nation's first and only major international conference on the new immigration, held at the Smithsonian Institution November 15–17, 1976), the Research Institute is now bringing to an end the first phase of its program. In light of the powerful effect RIIES has had in stimulating and directing academic researchers to study new immigration and new immigrants, it now will begin to focus on a more specialized program of studies and exhibits on the Caribbean region as both source and recipient of new immigration and immigrants and on the sociocultural processes that accompany such movements.

In the past year RIIES has been collecting and editing papers for publication of the following supplementary materials: *Contemporary Studies of the Black and Latin-American Female and the Migratory Experience in the United States*, with selected bibliography, edited by Delores Mortimer and Roy Bryce-Laporte; *The Urban Carnival: A Contribution of the Afro-Caribbean Immigrant to the United States Culture*, edited by Roy Bryce-Laporte, Elliott Parris, and Katherine Williams; *Historical and Contemporary Migrations from the Caribbean to the Latin-American Mainland*, edited by Roy Bryce-Laporte. The supply of many of the Institute's earlier publications has been exhausted by the demands of scholars, researchers, policymakers, and the interested public. These documents are undergoing revision for a second printing and in some cases expansion or supplementation.

In order to advance involvement of the new immigration intellectual community in educating the American public about ongoing cultural changes and contributions, the institute collaborated with the Afro-American Studies Program of Howard University in sponsoring a seminar on Carnival. This seminar took place on the Mall during the 1979 celebration of the Smithsonian's Folk Life Festival. As part of an outreach activity, three visiting scholars—Errol Hill (Dartmouth), Abidia Nascimento (SUNY-Buffalo), and Ronald Smith (Indiana)—gave presentations, including slide collections, at Howard University and at the Duke Ellington School of the Arts. A second aspect of the seminar on the Mall was the roundtable discussion for organizers of urban carnivals in the United States. The intricacies and exigencies of this cultural form new to American and Canadian urban life were clarified by Latin-American and West Indian immigrants. The Research Institute also participated in the opening of a photographic exhibition held at the Martin Luther King Library by *Festivals Magazine* on the Urban Carnival. All of these—the seminar, roundtable, and exhibition—are RIIES-sponsored or associated innovations to the carnival tradition which are now being adopted by immigrant organizations in specific cities of North America.

During the year, Dr. Roy Bryce-Laporte, director of the institute, participated in several meetings: the Second Congress of Black Culture held in Panama City, for which he was a member of the organizing committee and chairman of the panel on Race, Class, and Nationality; the Caribbean Studies Association meeting in Curaçao, Netherlands Antilles, where he served as a discussant on the panel on the Adjustments among New Immigrants to the United States; the annual meeting of the Caribbean-American International Organization, Washington, D.C., where he served on a panel on Linkages in the Black World. Dr. Bryce-Laporte also appeared before the United States Select Committee on Immigration and Refuge Policy as coordinator and member of a panel on Caribbean Immigration; served at the American Congressional Black Caucus as panelist on the Caribbean; attended two UNESCO conferences in Barbados, one on the Black African Presence in North, South, and Caribbean America, and the other on Planning for Advancing Social Science Programs in the Caribbean; lectured at the Institute of International Relations, University of the West Indies,



St. Augustine, Trinidad, on Caribbean Immigration and Its International Implications; attended a conference on Policy Implications at the University of Wisconsin at which he read a paper titled "The New Immigration: Its Origin, Visibility and Implications for Public Policy"; and collaborated on the paper "A Lesser Known Aspect of the African Diaspora: Jamaicans in Costa Rica," written with Trevor Purcell and originally presented at the Institute of Black Diaspora at Howard University.

### *National Museum of Natural History*

Dr. Richard S. Fiske was named the director of the Smithsonian's National Museum of Natural History/National Museum of Man (NMNH) in January 1980. Fiske is a geologist specializing in volcanological studies on the research staff of the museum's Department of Mineral Sciences. He is the fifth scientist on the museum's staff to hold the museum's directorship since it was designated the National Museum of Natural History in 1958.

#### EXHIBITS

The museum is in the process of reorganizing and redesigning its old paleobiology exhibits. Opening in spring 1980 were *The Conquest of Land* and *The Flowering Plant Revolution*, the first two highlights of a large new hall titled Fossils: The History of Life. The two highlights chronicle the momentous emergence of plant and animal life from the oceans about 400 million years ago and the later developments that gradually enabled this life to perfect the ability to live on land.

To explain and illustrate these developments, hundreds of plant and animal fossils from the museum's study collections were integrated in context with their ancient environments. Among the spectacular fossils on display are *Eryops*, a 6-foot-long reconstructed fossil amphibian that lived 270 million years ago in what is now Texas, and *Callixylon*, a 15-foot-high fossilized segment of one of the world's earliest trees.

The planning for the project was carried out by an NMNH scientific committee composed of Dr. Ian MacIntyre, chairman; and Drs. Daniel Appleman, Robert Emry, Leo Hickey, Nicholas Hotton,

Kenneth Towe, and Thomas Waller, in coordination with Gene Behlen, MNH's Office of Exhibits chief, and William Haase, assistant chief. Planning for the new exhibit hall's other highlights is currently in progress.

Four crystallized gold pieces of extraordinary beauty recently acquired by the museum are the centerpieces for a permanent new display of gold that opened in the museum's mineral hall in December 1979. The exhibit was organized by John Sampson White, associate curator in MNH's Department of Mineral Sciences.

Every two months a special exhibition of photographs, paintings, drawings, or sculpture is installed on the museum's third-floor rotunda balcony. These shows—dealing with either natural history or anthropology—are selected by the museum's Exhibits Committee from entries submitted by the public. During the 1979–80 year this gallery featured: *A Shell Game: Reconstructing Designs on Pre-Columbian Shells from Spiro; Oklahoma; Geological Art of William H. Holmes; Swedish Bronze-Age Rock Carvings; African Insights: Nature Photographs by Mignon Davis; Palms of the Lesser Antilles: Botanical Drawings by Alice R. Tangerini Based on the Research of Dr. Robert Read; and The Farallon Islands: A Conservation Success Story.*

Special exhibitions are also mounted periodically in the museum's first-floor Learning Center Gallery. The 1979–80 attractions were *Eskimo Narrative, Chinese Children's Art, Powhatan Tribal Artisans: Contemporary Indian Potters, and Japanese Toys Today.*

On view in 1980 in the National Anthropological Archives second-floor alcove photo gallery was a selection of *Far Eastern Photographs*, from the NAA's holdings.

A series of exhibits on staff research mounted in a display case in the museum's Constitution Avenue lobby continued in 1979–80 with shows on Dr. David Pawson's studies of deep sea cucumbers and other echinoderms, Dr. Ronald Heyer's use of sound equipment to analyze frog calls, and Dr. James Mead's research on stranded whales and dolphins along the Atlantic coast.

#### ANTHROPOLOGY

Nineteen eighty marks the centennial of the beginning of the Smithsonian Bureau of American Ethnology's famous investigation of the prehistoric "Mound Builder" Indians. In the decade that



followed, more than two thousand mounds were examined, a staggering effort, even in comparison to today's multi-million-dollar archeological research projects.

Believing that an in-depth analysis of the Survey was long overdue, and that the approaching centennial was a timely occasion for it, MNH's Department of Anthropology in January 1980, in co-sponsorship with the Lower Mississippi Survey (LMS), Peabody Museum, Harvard University, held a three-day conference for eighteen archeological scholars involved in studies of the prehistoric cultures of the Southeast and Lower Mississippi Valley. MNH and LMS anthropologists Dr. Bruce D. Smith and Dr. Stephen Williams were the organizers. The project was funded by the Smithsonian's Scholarly Studies program.

An Arctic Museum Training Workshop—the first ever held—brought to the museum in 1979 a group of Eskimos (Inuit), Indians, and other northerners from Greenland to Alaska. The ten-day conference organized by MNH anthropologist William Fitzhugh was attended by officials of national museums in Canada and Greenland and by individuals representing a number of groups and local communities where museums and culture centers have been discussed or are in actual operation.

Presentations included discussion of collection management, storage, security, documentation, and recordkeeping, by Vincent Wilcox, anthropology collection manager; an overview of common artifact deterioration problems and how they can be avoided, by Carolyn Rose, head of the museum's Anthropology Conservation Laboratory; introduction to the museum's Anthropological Archives and its collections of documents, field notes, maps, and photographs, by Herman Viola and James Glenn, Archives administrators; a presentation of how museums can pass cultural information on to school-age children, by Ruth Selig and Ann Bay, specialists in education; and a discussion of the steps involved in setting up an exhibit, by Eugene Behlen, head of the museum's Office of Exhibits.

A significant event in 1979–80 was the inauguration of a reprint series titled "Smithsonian Classics in Anthropology." James Mooney's Kiowa study and John Swanton's encyclopedic account of the Indians of the southeastern United States were the first two works published in the series.

## BOTANY

Two botanical studies involving many years of Indian Ocean field work and research by MNH scientists appeared in 1980. The first volume in a projected six-volume work on *Flora of Ceylon* was published in February in India by the Smithsonian and the National Science Foundation. This project, directed by MNH Botanist Emeritus Dr. F. Raymond Fosberg, involves a family by family revision of the out-of-date *Handbook to the Flora of Ceylon* published in 1895 by Henry Trimen. Some fifty scientists throughout the world are contributors to the project, including MNH's Thomas Soderstrom, Robert Read, Joan Nowicke, Dan Nicholson, and Marie Helene Sacht. In April *The Flora of Aldabra and Its Neighboring Islands* was published by the Kew Royal Botanic Gardens. Fosberg was senior author of this work in collaboration with Stephen A. Renevoize of Kew. It is the first major botanical treatment of this group of islands in the western Indian Ocean, the last Old World refuge of the giant tortoises, and site of a Royal Society research station, now being maintained by the Seychelles Foundation in which the Smithsonian is involved.

National Museum of Natural History botanists turn to the scientific literature for the answers to questions about the plants they are researching. Yet, often they must search many books and papers in scattered libraries before they find the information they are after. In 1979–80 two botanical reference works came out that bring together and make more accessible key botanical source material. Museum scientists played a key role in the production of both these works. The three-volume *Index Nominum Genericorum*, an index of the generic names of all major plant groups, was published in November 1979 with the support of the Smithsonian, the International Association of Plant Taxonomists, and the National Science Foundation. The editors were Dutch botanists Jan A. Leussink and Frans A. Stafleu and MNH's Ellen R. Farr. Over one hundred scientific collaborators contributed to the text for the index, which covers about 63,500 generic names. MNH's Dr. Richard Cowan in collaboration with Frans A. Stafleu of the Netherlands was the coauthor in 1979 of volume 2 of the projected six-volume work *Taxonomic Literature, 2d Edition*, a selective guide to botanical publications and collections (1753–1939). (Volume 1 was published in 1976). The work treats all book and booklike material



of importance to the botanical taxonomist, including references to biographical details on the authors cited.

#### ENTOMOLOGY

Museum entomologist Dr. Don R. Davis is engaged in a long-term effort to reclassify the primitive micro-Lepidoptera, an order of insects that has survived on earth relatively unchanged for at least 200 million years. Learning more about these bizarre "dinosaurs of the moth world" is crucial to clarifying the evolution and classification of the order Lepidoptera, the poorest known of all insect groups.

Primitive moths live in the regions of the world that are the leftover fragments of Gondwanaland, the southern hemisphere supercontinent that was the ancestor of the modern continents. Davis has made field trips to three relict areas: South Africa (1978), Chile (1979), and Taiwan (1980), assembling one of the world's finest representative collections of these rare survivors of a bygone time.

Development is rapidly changing or destroying many of the areas where the primitive moths live, and Davis regards it as a race against time to get the biological data that will provide a complete understanding of the primitive moths' four major growth forms. Questions such as how do larvae feed remain unanswered because of the difficulty in discovering the whereabouts of the immature forms.

At the National Museum of Natural History, Davis carefully dissects the internal as well as the external portions of a specimen's anatomy so that it can be placed on slides and subjected to a critical study at magnifications as high as 30,000 power. Close attention is given to sensory structure found in the insect antennae and wing venation as well as to ultramicroscopic details in the scales that clothe the body. "We have more material to study than we've ever had before and we're beginning to put the pieces together that will enable us to make important studies in tracing moth evolution from primitive to advanced stages," Davis says.

The three volumes of the 2,735-page *Catalog of Hymenoptera in America North of Mexico* was published in 1979-80 by the Smithsonian Institution Press. This monumental reference work was prepared under the direction of MNH entomologists Karl Krombein



NMNH entomologists Dr. Paul Hurd (*left*) and Dr. Karl Krombein look at the final volume of their monumental 2,735-page *Catalog of Hymenoptera in America North of Mexico*, published this year by the Smithsonian Institution Press.



and Paul Hurd and the United States Department of Agriculture's David Smith. The *Catalog* contains all the basic systematic and biological information on the continent's bees, wasps, and ants. Reviewers have called it the finest catalog that has ever been published on a major group of insects for any major geographic region.

While the format of the present catalog closely parallels that of its outdated predecessor, efforts were made to increase the information content to fulfill better the needs of the biological community. This has been accomplished by including more prose information at the family, subfamily, and generic levels. There is also specific information on animal and plant hosts, parasites and predators; a host-parasite index is included.

The most revolutionary step undertaken was the decision to enter the entire catalog into the museum's specimen-based computer bank. Hurd, Krombein, Smith, and other members of the catalog Editorial Board worked closely with Dr. James Mello, now MNH's associate director, to develop a data storage bank that will permit users to ask sophisticated questions relating to systematics, biology, ecology, and distribution of Hymenoptera. With a computerized data base, much of the expense related to data preparation and editing will be unnecessary for future catalog editions. New editions can be rapidly published as soon as justified by the volume of new entries. It is also possible to produce an interim catalog of a single family where the volume of new information justifies such a course.

#### INVERTEBRATE ZOOLOGY

Dr. David Pawson, curator of echinoderms in the museum's Department of Invertebrate Zoology, in 1979–80 made some fifteen dives off the coast of Florida in the *Johnson-Sea-Link* submersible—in collaboration with Dr. John E. Miller of the Harbor Branch Foundation—for the purpose of studying sea cucumbers and sea urchins. The common cucumbers and urchins *Holothuria lentiginosa enodis* and a subspecies of *Centrostephanks longispinus* had not previously been reported from the western Atlantic but Pawson and Miller observed large populations of these animals on the sea bottom.

The echinoderms were living at depths of 250–300 feet along an ancient shoreline on the edge of the continental shelf that had not been closely explored by biologists before. Pawson is interested in the distribution, reproductive biology, and growth of these animals and is using time-lapse photography to study their movement around the reef. Specimens were captured for study in a collection device attached to the submersible's mechanical arm.

The *Johnson-Sea-Link* dives were an extension of earlier underwater research Pawson had carried out in the *Alvin* submersible in deeper water east of New York and in the Caribbean in 1975 and 1977. Through such dives Pawson has been able to shed new light on the biology of echinoderms living on the outer edge of the continental shelf and in the deep sea.

Dr. Mary E. Rice, a curator in the Department of Invertebrate Zoology, continued her studies of the life histories of sipunculan worms, examining and comparing development of several species spawned in the laboratory. One species, *Golfingia pellucida*, was reared from egg to juvenile worm. This is the first time that any sipunculan with a planktotropic larval stage has been successfully reared through metamorphosis. Dr. Rice documented developmental changes by scanning electron microscopy, focusing on metamorphosis of the planktonic larva to the juvenile stage. Behavioral changes and factors inducing metamorphosis, including substratum preference and presence of adults, were investigated. (On this work, *see also* the report of the Fort Pierce Bureau, *above*.)

#### MINERAL SCIENCES

Pumice ejected during the 1980 eruptions of Mount Saint Helens is under study by MNH volcanologist Dr. William G. Melson in an effort to enlarge understanding of the phases of major eruptions and the mechanisms that lead to them. Melson's examination shows that magma (molten rock) transformed into pumice in the eruptions had a very high content of dissolved waters—a critical state that is believed to precede intense eruptions. Electron microprobe and petrographic microscope analysis detected the dissolved water in the abundant quantities of glass encapsulated in crystals growing in the magmas of May 18 and 25 and July 22.

If magma is rich in dissolved water, Melson explains, it requires high confining pressures. Failing that, the dissolved gas explosively



separates from the magma—forming the lighter-than-water volcanic froth called pumice.

Melson has also analyzed pumice from the catastrophic eruptions of Mount Saint Helens that took place 180, 460, and 4,500 years ago, finding that these specimens are quite similar in makeup to the 1980 eruption. The evidence suggests that after long periods of repose—in this latest case about 130 years—the magma beneath the volcano becomes increasingly rich in dissolved water and is replenished by new rising pulses of magma from depths probably as deep as 100 kilometers. Once a certain bulk composition is reached, the overpressures apparently become so great that the volcano begins to deform. Eventually, as it fractures, the water-rich liquid is tapped, and a violent explosion caused by the separation of water vapor from the liquid then ensues.

The recent discovery of a large number of meteorites in Antarctica has excited the scientific world. MNH meteorite curator Dr. Brian Mason is the scientist designated by the National Science Foundation (NSF) to make the initial petrographic studies of the Antarctica finds.

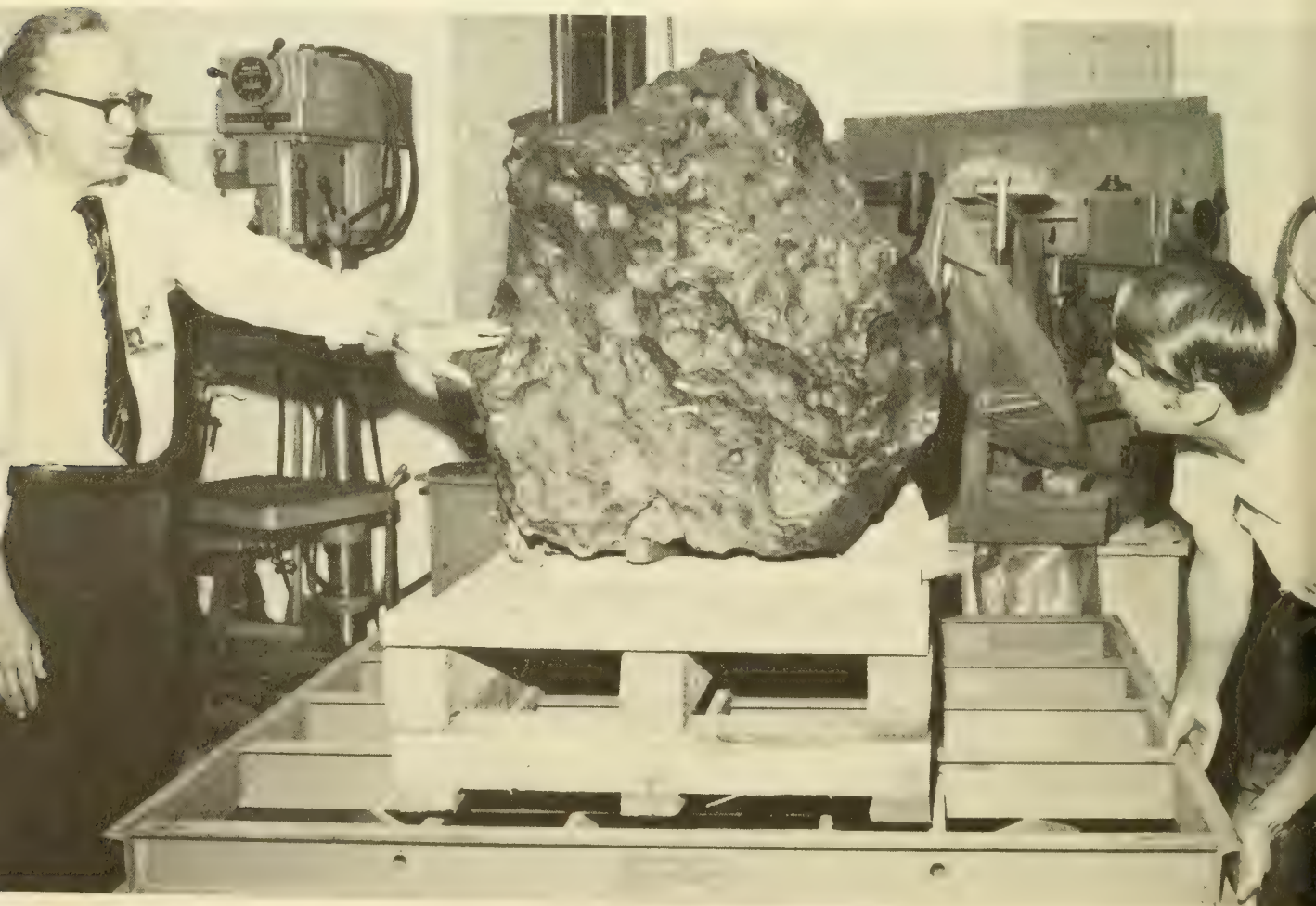
Dr. Mason and colleague Dr. Ursula B. Marvin of the Smithsonian Astrophysical Observatory have now published through the Smithsonian Institution Press a fifty-page catalogue of the first large United States meteorite discovery in Antarctica—more than three hundred specimens collected in 1977–78 near the Allan Hills in Victoria Land by an NSF-funded expedition led by Professor William Cassidy of the University of Pittsburgh.

Eighty-five specimens of the 1977–78 collection, including most of those weighing over one hundred grams, are characterized in this study. The book is designed as a basic source for scientists throughout the world interested in further analysis of this unprecedented windfall of extraterrestrial material.

The Old Woman Meteorite, a rare iron and nickle specimen discovered in 1976 in the Old Woman Mountains of San Bernardino County, California, was cut for scientific study by the museum in 1980 in an exacting four-month operation. The cut section—15 percent of the meteorite's 6,070-pound bulk—disclosed an internal structure transition between two well-known meteorite types (octahedrite and hexahedrite), which MNH meteorite curator Roy S. Clarke, Jr., believes to be the first of its kind ever recorded.



Final touches are made on the reconstruction of *Eryops*, an early amphibian, by Leroy Glenn of NMNH's Vertebrate Preparation Lab. (Photo by Chip Clarke.) Below. Meteorite curator Dr. Roy S. Clarke and Fred Jones of NMNH's Mineral Sciences cutting lab position the 6,070-pound bulk of the Old Woman Meteorite before cutting a slice of it for study. (Photo by Vic Krantz.)





Samples of the small cut piece along with MNH research findings will be shared with scientists around the world. A broad range of cooperative research planned by Smithsonian scientists over the next two to three years will include studies of the meteorite's morphology, chemical composition, mineral distribution, metallography, and rare gas content.

The decision to cut the meteorite was made in 1979 based upon the recommendations of a scientific panel whose views were solicited by Smithsonian scientists. Following the cutting, the major portion of the meteorite was mounted and shipped to the United States Bureau of Land Management Office, at Barstow, California, for exhibition.

#### PALEOBIOLOGY

MNH paleontologist Dr. Nicholas Hotton III, in a paper published in 1980 by the American Association for the Advancement of Science, disputes the controversial new theory that portrays dinosaurs as warm blooded like living mammals. He argues that the reason dinosaurs became so much bigger than living animals as a group was to maintain constant body temperature. They sustained a high level of activity, which functioned as source of body heat, and therefore required no special mechanism for internal heat production like mammals have. This alternative mode of thermal physiology would have made life-styles available to dinosaurs that may well have been as exotic as their body form, the like of which no man has ever seen.

Hotton says that although the limb bones of dinosaurs are evidence that they lived an active life, it is wrong to interpret the structure of these limbs as an adaptation to a mammal-like running gait. In fact, there is evidence that dinosaur locomotion—shaped by the animal's exotic thermal physiology—was very different from that of mammals. Hotton's studies of the hip bone of the dinosaur show that it is not ball-jointed like a mammal's hip bone. This makes it impossible for dinosaurs to have been agile of foot like mountain goats or fast runners like horses or camels. Instead, Hotton says, the hip joint and other aspects of the limb structure of the dinosaur—along with the animal's thermal physiology—primarily fit it for walking "slowly and steadily" over long distances.

To gather enough food to maintain their body temperature dinosaurs would have had to wander continuously, and to Hotton the evidence suggests that they made a leisurely seasonal migration northward every year, traversing a couple of thousand miles over a period of four to six months before turning south. Thus dinosaur fossil remains that have turned up in the far north do not indicate where dinosaurs lived year around—but where these “happy wanderers” summered.

MNH's Dr. Leo Hickey made a study in 1979–80 of the exotic fossil flora of Ellesmere Island. The island's barren landscape high in the Canadian Arctic is rich in fossils dating back from forty to eighty million years ago when the earth's climate was warm and wet, and lush forests extended north into the Arctic zone.

Dr. Robert M. West of the Milwaukee Public Museum and Dr. Mary Dawson of the Carnegie Museum of Natural History have been studying unusual vertebrate fossils unearthed in the island's Eureka Sound Formation. Eager to obtain more data about the total ecosystem in which these animals lived, Dawson and West invited Hickey, a paleobiologist and expert on reconstructing North American floral environments, to go with them to Ellesmere in 1979. Although the Ellesmere plants and trees have been sketchily known for over a century and were a cause of wonder for the early Arctic explorers, Hickey is among the first to apply modern techniques to identify them and decipher their environment.

Hickey found that Ellesmere's ancient fossil forests were totally dominated by deciduous forms (conifers like dawn redwood and hardwoods including birch, maple, sycamore and Mexican elm), temperate-climate trees that today one finds growing in regions that experience some frosts. This seemed to conflict with the fact that remains of giant tortoises, alligators, and flying lemurs were preserved with the trees. Modern species of these animals cannot survive hard frosts and, assuming this was true of their ancestors, it seemed likely that the ancient forests of Ellesmere should have been dominated not by deciduous trees, but by warm-climate evergreen trees like palms, persimmons, and avocado relatives—as were forests further south in the same period.

Hickey's explanation for this is that although the temperature may have been warm enough to support trees with evergreen



leaves, the four to six months of polar darkness at Ellesmere each year would have made it impossible for them to survive.

#### VERTEBRATE ZOOLOGY

Dr. Storrs Olson, a paleobiologist in the Museum of Natural History's Bird Division, has identified a previously unknown fossil group of giant flightless penguinlike birds. This discovery was reported in a November 1980 article in *Science* magazine, co-authored with Yoshikazu Hasegawa, a colleague at Tokyo's Science Museum.

Fossil remains of the birds were found by various collectors in Japan in the early 1970s and turned over to Hasegawa, who consulted Olson about the material. Olson's diagnosis was that the fossils belonged to the family *Plotopteridae*, a group described in 1969 by Hildegard Howard on the basis of a single fossil bone found in southern California. The Japanese material and a partial skeleton recently collected in the state of Washington now makes available enough material to provide a knowledge of most of the bird's skeletal elements.

The penguinlike bird—probably measuring more than two meters from bill tip to tail tip—lived about thirty million years ago in areas bordering the North Pacific. It belongs in the order *Pelicaniformes* (an order that includes pelicans and cormorants) and most of the skeleton resembles members of that group. The wings and scapula, however, are closer in appearance and structure to those of a penguin, which belongs to the order *Sphenisciformes*.

Olson believes the discovery marks one of the more impressive instances of convergent evolution in the fossil record, suggesting that if a bird wants to use its wings to move underwater, it eventually will become penguinlike in appearance.

MNH's mammalogist Dr. Charles O. Handley, a long-time resident of Virginia, has a concerned interest in the wildlife of his state. Last year he published a status report on the state's wild mammals that points out that their number and variety continues to decline. Handley cites twenty-seven currently troubled or potentially troubled species of Virginia mammals. These range from the tiny pygmy shrew—the smallest North American mammal, weighing only a fraction of an ounce—whose decline may have begun before man settled Virginia, to the mountain lion, an animal long

believed extinct in Virginia. This cat is being seen again now, after a lapse of almost a century, but its numbers are so low that it must be considered endangered.

The status report is based on field notes, research in the literature, and communications with game managers and other scientists. Whenever possible Handley proposes steps to protect and revitalize troubled mammal populations, no matter how obscure. An exception is the black rat, an alien resident of Virginia since colonial times. It is now in decline and Handley says its loss "would be mourned by very few persons."

#### OFFICE OF EDUCATION

Docent-led tours were provided to more than 40,000 visitors in the museum this year. The Discovery Room and Naturalist Center attracted more than 100,000 persons, while about 15,000 came to lectures or saw films in weekly programs.

The renovation of the Discovery Room, funded by two grants, was completed. A grand opening and sixth anniversary party was held on March 5. The see-through exhibit wall, new carpet and color scheme, and several additions to the touchable materials were highlights of the redecorated exhibit area. This innovative, participatory exhibit has often been used as a model for similar exhibit areas by other museums.

The Year of the Coast was observed in the museum with a successful and well-attended series of lectures and films each Friday and Saturday, in Baird Auditorium.

Several gifts to the Naturalist Center made possible further development of the laboratory/classroom and the audiovisual center. Desks, lights, stools, video equipment, and a *camera lucida* for scientific illustration have increased the variety of services offered to amateurs and scholars in the Naturalist Center. Attendance increased during the summer months as visitors discovered the center and the resources it offers.

An Outreach Program, directed to special audiences unable to come to the museum, brought a variety of natural history programs to the elderly, hospitalized, and institutionalized. This program, funded for another year, will be expanded to include joint programs with the National Zoo and the Museum of African Art in 1980-81.



## PUBLIC SYMPOSIUMS

### Mount Saint Helens

In response to the intense interest in the Mount Saint Helens eruption, MNH volcanologists on June 2, 1980 held two illustrated public briefings on the events at the volcano. Both sessions—noon and evening—drew near capacity crowds to the 500-seat Baird Auditorium.

Chairing the proceedings was museum director and volcanologist Richard S. Fiske. He and colleagues William G. Melson, Tom Simkin, and Lindsay McLelland reviewed, interpreted, and answered questions about the eruptive activity taking place at Mount Saint Helens. At the evening session, Dr. Robert I. Tilling, Supervisor of the United States Geological Survey's volcanological efforts at Mount Saint Helens, joined Smithsonian scientists.

### Plains Indians

Sixteen prominent American anthropologists and historians gathered at the museum's Baird Auditorium in April 1980 for a public symposium on the archeology and ethnology of the Plains Indians. The meeting honored John C. Ewers and Waldo R. Wedel, two distinguished pioneers in Plains studies. Both men are emeritus scholars in the museum's Department of Anthropology.

The symposium was organized by Douglas H. Ubelaker and Herman J. Viola of the museum's Department of Anthropology. Among the participants were Mildred Wedel, Museum Research Associate; James Hanson, Native American Museum Training Coordinator with the Smithsonian's Office of Museum Programs; Dennis Stanford, Museum Archeologist; and George Frisson, Smithsonian Regents' Fellow and head of the Department of Anthropology at the University of Wyoming.

### Building Improvements

Handicapped visitors to the museum now have better access through a series of ramps and automated doors installed in the spring of 1980 at the main Constitution Avenue entrance. The work, overseen by museum Building Manager Jerome Conlon, involved construction of one ramp leading to an automated outside

door and a second ramp leading to an automated inside door with access to the lobby. Changes were also made at the museum's Mall doors to improve general visitor access. Two new sets of doorways were cut—one set on each side of the existing doorway—to double the capacity of this heavily used entrance.

#### HANDBOOK OF NORTH AMERICAN INDIANS

The cultures and histories of the contemporary Pueblo peoples are the focus of *Southwest*, the third volume in the Smithsonian's encyclopedic *Handbook of North American Indians*, published in April 1980 (the first two volumes, *California* and *Northeast* were issued in 1978). *Southwest* includes a chapter on the history and unique character of each of the modern Pueblo settlements.

Work continued during 1980 on *Subarctic*, the next volume in the series, scheduled for publication early in 1981. This volume focuses on the significance of the natural environment in affecting major aspects of the Indian culture of Canada and interior Alaska. The complete encyclopedia, published under the general editorship of MNH's Dr. William C. Sturtevant, will consist of twenty volumes.

#### SMITHSONIAN OCEANOGRAPHIC SORTING CENTER

The Smithsonian Oceanographic Sorting Center received several important collections of marine biological specimens over the past year. Coastal zone plants and animals from northern Australia, New Guinea, the Moluccas, and the southern Philippines were collected aboard the research vessel *Alpha Helix* by staff members Frank Ferrari and Gordon Hendler with Dr. Bruce Collette, of the National Museum Fisheries Service Systematic Laboratory. Collections of marine fishes from Halmahera Island made for the Oceanographic Sorting Center by Yale University anthropologists, and marine algae from Palawan Island, Philippines, collected by Ernani Menez, complemented the *Alpha Helix* collection.

Staff members Jerome Finan, Victor Haley, and Lang Ong were invited to participate in several cruises to the Bering Sea conducted by the Northwest Fisheries Laboratory in Seattle. Benthic marine invertebrates and fishes captured during the bottom trawling operations were shipped to the Sorting Center for distribution and study.

Neotropical collections were made from the Belize Barrier Reef



by Gordon Hendler and Barbara Littman, and from the mouth of the Orinoco River, Venezuela, for the center by Drs. John Lundberg and Jonathan Baskin aboard the research vessel *Eastward*. Dr. Lundberg and research associate Dr. Edith Marsh spent the summer here working on the Orinocan fishes.

#### SCIENTIFIC EVENT ALERT NETWORK

The devastating eruption of Mount Saint Helens generated an unprecedented demand for information from the museum's Scientific Event Alert Network (SEAN), which publishes a monthly bulletin of geophysical and biological events for distribution to the world's scientific community. The interdisciplinary communication at the 1979 SEAN-sponsored conference on the eruption of Soufriere of Saint Vincent contributed substantially to broadening the research effort on Mount Saint Helens, particularly in the use of satellites and high-altitude aircraft to monitor and sample the ash cloud.

In 1980, SEAN began a cooperative program with the National Marine Fisheries Service to develop an extensive marine turtle salvage and reporting network for the United States Atlantic coast. Monitoring of strandings of marine mammals was substantially expanded and SEAN built an additional network of correspondents to report on deaths of the endangered sea otter. SEAN also reported the discovery of a giant squid on the beach at Plum Island, Massachusetts, in February 1980, only the fourth United States find of this little-known species. This rare specimen is now under study by MNH's Dr. Clyde Roper.

#### CUBAN EXCHANGE

The first three MNH scientists to begin research projects in Cuba following an April 1979 Smithsonian-Cuban Academy of Science cooperative exchange agreement were Drs. Robert Read, Storrs Olson, and Porter Kier. In an October 1979 visit to Cuba, Read collected palms at type localities in collaboration with Cuban botanists Onaney Muniz; Olson went into the field with the National Zoo's Dr. Eugene Morton to search for rare species of endemic birds; and Kier worked in Havana on a large collection of fossil sea urchins, one of the most important collections of its kind in the world. Reciprocal visits of Cuban scientists to MNH are scheduled.

## CHINA EXCHANGES

MNH curators Drs. Thomas Soderstrom, Don R. Davis, William B. Trousdale, J. Laurence Barnard, and Richard E. Grant were members of a delegation from the Smithsonian that visited the People's Republic of China in November 1979 to see Chinese scientific institutes and museums and discuss exchanges and joint projects in biology, archeology, and museology. All five scientists were able to contact specialists in their area and discuss possible future collaborative research projects. Reciprocal visits by Chinese delegations have followed. In May 1980 Dr. Yin Hongfu, a specialist on fossil mollusks, became the first distinguished scholar from the People's Republic of China to study at MNH for an extended period of time. He was selected for this honor by his colleagues in the Paleontological Society of China. His one-year United States study trip is sponsored by the Ministry of Education of the People's Republic of China.

## COLLECTION INVENTORY

The collection inventory at the National Museum of Natural History is on schedule. Upwards of 400,000 records were compiled in 1979-80, representing a count of over a million items in storage. The total computerized data base will consist of nearly two million records by the end of the 1979-80 year and will continue to grow by 400-600 thousand records per year thereafter. Completed or near completion are records for the archeology/ethnology objects, certain families and orders of insects and marine invertebrates, the Cambrian and Ordovician stratigraphic series of fossils, the egg and nest collection, the fish tank collections, primates, and the Smithsonian Oceanographic Sorting Center collection. All of these collections fall into a priority category because they are valuable specimens, types, or objects scheduled for transfer to the Museum Support Center. Steady progress is being made towards completing, not later than 1984, inventories on all collections that fall into these priority categories.

## *National Zoological Park*

Fiscal year 1980 has seen the successful continuation of all programs of exotic animal management, exhibition, breeding, research,



conservation, and animal health. The construction and improvement programs continue apace. The support services strive actively to respond to all the National Zoo's needs. Proper care of the animals depends on many different talents working cooperatively together.

#### *ANIMAL COLLECTION AND EXHIBITS*

In exhibitry, the opening of the new North American Mammals Exhibit on May 4, 1980, represents the culmination of several years of planning and construction. It is also another milestone in the redevelopment and modernization program for the National Zoo.

This North American Mammals Exhibit consists of a meandering walk through the woods, down the little valley (between the old bear exhibits and the police station) that connects the lower part of Beaver Valley and the new bear exhibits with the center part of the Zoo. Exhibited in the spacious, modern enclosures are pumas, jaguars, raccoons, bobcats, a hawk exhibit, kit foxes, martens, skunks, lesser pandas, and prairie dogs. The kit foxes showed their pleasure in their larger quarters by breeding and producing, as far as the staff now knows, the fourth litter of pups in captivity.

Special labels have been made for the trees, wild animals, and birds that may be seen in the area. This exhibit emphasizes North American animals, the lesser panda being the exception. It is a low-key but very pleasant and interesting display.

The almost completed new Ape House should be occupied and open in the early part of fiscal year 1981. The Small Mammal Building will be totally renovated over the next eighteen months. The animals from this building have all been sent to Front Royal or to the old mechanical shops holding area. The orangutans and gorillas are in the holding areas of the new Ape House pending decoration of their enclosures and the public opening.

At a facility in Louisiana, in a cooperative breeding program with the New York Zoological Society, our National Zoo's over-forty-year-old female Chinese alligator bred and produced eighteen viable young. A narrow-nosed crocodile which Dr. Mann brought back from his 1940 Liberia expedition is on a cooperative breeding loan to the Miami Zoo. For her first time she has produced a clutch

of eggs; these have not yet hatched. The Masai giraffe group which came to the National Zoo in 1961 produced in August 1980 its nineteenth giraffe colt. The colt, a male, was named David after Dr. David Challinor, Assistant Secretary for Science. This is the thirty-second birth among the giraffes since the National Zoo first exhibited this species in 1937.

There have been a gratifying number of hoofstock babies born throughout the year. At Front Royal the bactrian camel herd was blessed with five foals. The Pere David deer and scimitar-horned oryx at Front Royal continue to produce well. Also, the National Zoo's cooperative program for the Przewalski horses with the Minnesota State Zoo resulted in foals.

On the day before the move to the new Ape House, Pensi, the female orangutan, gave birth to a female baby. This is a second baby born to the Zoo's captive-born-and-reared male and female orangutans. The Zoo staff is very proud to have another true second-generation-captive-born orangutan. The baby, named Indah, has been removed from her mother for handrearing. Indah is now at the San Diego Zoo to be reared with other young orangutans. She and the first second-generation baby now in New Mexico will be returned to the National Zoo when the youngsters are old enough to integrate socially with the group and when the building is able to be fully occupied.

All animals in the Reptile House have been moved to the old mechanical shops building while their house undergoes complete renovation. We hope for public opening of the renovated Reptile House in the third quarter of fiscal year 1981. For the third year the Emerald Tree boa has been successfully bred and the young reared.

The birds continue to breed well although the duck-rearing program has been slow this year because the renovation and improvements to the duck ponds interfered with the breeding season. There have been many birds hatched at both Rock Creek and Front Royal. The most interesting gain was the hatching and rearing of two satin bowerbird chicks. As far as the Zoo staff has been able to determine, this is the first captive breeding outside of Australia.

The breeding and rearing of the short-tailed bat—first started several years ago in the zoological research laboratories—continues



on exhibition and is now well into the fourth generation. Twenty-two batlings have been born this year.

At Front Royal there were two parent-raised litters of bush dogs. The male bush dog participates in the rearing.

This year saw the completion of a three-year project of erecting 15½ miles of perimeter fence.

The golden marmoset breeding and study programs (mentioned in previous reports) continue to progress well. During the past decade, the National Zoo has had over 170 marmoset babies born. They have been shipped to many zoos in this country and overseas. At the present time our Zoo has golden marmoset cooperative breeding programs with fourteen zoos. This year we were fortunate to receive five new golden marmosets from the Biological Bank, Tijuca Park, Rio de Janeiro. This addition of new blood will be very beneficial to the breeding program and is a continuation of close cooperation with Brazilian colleagues.

The breeding program of the lesser panda continues to progress successfully with eight litters and twelve babies this year. There have been over fifty lesser pandas born here and at the eight zoos in the United States and overseas where our Zoo has cooperative breeding programs.

The National Zoo is committed to cooperative breeding programs with other zoos. The National Zoo has over two-hundred animals loaned out for breeding purposes and about an equal number of animals have come to the National Zoo from other zoos. The animals we are privileged to have in the National Zoo must be considered as part of the national and international collection of captive animals. To sustain captive breeding in zoos, every effort is made to cooperate with colleagues in breeding and rearing exotic animals.

Ham, the astronaut chimpanzee, in September 1980 left Washington on a long-term loan to the North Carolina Zoological Park, Asheboro, North Carolina. The National Zoo's breeding and exhibition program does not include plans for the chimpanzee. It is best for Ham to be introduced to a group of his fellow chimps since they are social animals. The facilities at Asheboro are excellent and Ham will have the best opportunity there for becoming a socially integrated chimpanzee.

Because of kidney degeneration, the euthanasia of Matilda,

matriarch of the National Zoo's breeding group of pygmy hippopotamuses, took place this year. Matilda had originally come to the Zoo from Dr. Mann's 1940 Liberia expedition. The last of her nine babies was born in 1965.

Another sad loss occurring in 1980 was the death of Raji, the seventeen-year-old female rhinoceros, from pyloric occlusion resulting in impaction and bloat. She was the mother of the first Indian rhinoceros born in the Western Hemisphere; her son is now on cooperative breeding loan to the New York Zoological Society. Postmortem examination revealed a large (about the size of a soccer ball) ovarian cyst, explaining why she herself never bred again.

As for the giant pandas, the continuing saga of attempted mating goes on. This year the approach has been different. When the female, Ling-Ling, came into estrus, on May 15, 1980, she and her would-be mate, Hsing-Hsing, were placed together for two days. Their performance was a repeat of previous years' vocalization, unsuccessful mountings, and the usual amount of fighting. Having predicted that this year's breeding attempt would be a repeat of past performances, Zoo staff proceeded with a new plan.

Hsing-Hsing was immobilized on Saturday, May 17, and electroejaculated. The semen collected was not as good as the collection made in January 1979. After Hsing-Hsing woke up, in about twenty minutes (it being the practice of the Zoo not to have two animals immobilized at the same time), Ling-Ling was then immobilized and inseminated with half of the semen. The next day the procedure was repeated. Ling-Ling evidenced no adverse or unusual reactions to her experiences and she went out of heat on schedule.

Chinese colleagues had provided information on their techniques used in two out of five successful artificial inseminations of the giant panda. These techniques had been slightly modified for particular time and circumstances at the National Zoo. However, the possibilities and probabilities of a successful pregnancy are unknown because of the many unknown variables when breeding a new species for the first time. Details of the male and female anatomy are not well understood. The hormonal levels of both animals, the production of semen and the ova, are also not known.

Despite the low probability of having a successful birth, every





In continuing attempts to produce giant panda offspring at the National Zoo, Ling-Ling was artificially inseminated in May, though by October it became evident to television audience and Zoo staff that there would be no baby panda in 1980. On the brighter side, the ruffed lemur (*right*) was successfully bred at the Zoo and is growing rapidly. *Below*. The inviting trail through the North American Mammals Exhibit is representative of modernization under way at the Zoo. This is the only area where vegetation is labeled.



effort was made to prepare for the birth. A cubbing den was specially equipped. The exercise room for Ling-Ling was prepared. Remote control television cameras with recording monitors were set up. A monitor was put in the Education/Administration building lobby so the public could see the female panda off of exhibit. If there were a birth the public would be able to see the baby.

Starting on September 20, round-the-clock television watches were instituted and carried on until October 1—when it became clear that this was not to be the year of the panda and that the nation was not to be blessed with a baby panda in 1980 despite all dedicated efforts!

This year, nonetheless, ruffed lemur babies were born to a pair we received from the San Diego Zoo. This is the first time this beautiful lemur has been exhibited or born at the National Zoo. It is interesting to watch the very rapid growth and development of the offspring as compared to some of the more advanced primates such as the macques or gibbons.

#### CONSTRUCTION

Three necessary but unspectacular construction projects were completed this year. First, new water and sewer lines were added to the bird ponds below the restaurant. Since construction of these ponds during WPA days there had been one water inlet at the upper end and one drain at the lower end. There are now water inlets and drains to each pond. New plantings were also added to the area. The cement and rock work were pointed up and restored to improved condition—although to the general public things may look exactly as they did before.

The second project was construction of a new public toilet facility at the head of Beaver Valley. This building is necessary because of the increased visitor use of this area with the opening of the seals and sea lions exhibition. In the third project, the analytical nutritional laboratory was constructed and furnished for the staff nutritionist in the old shops building.

#### PERSONNEL

Mr. Gaetano G. Calise, Jr., an engineer with long experience in construction, planning, and facilities management, was hired October



1979 as assistant director for support services. Dr. Edwin Gould, zoologist, was hired September 1980 as curator of the Department of Mammalogy. He will have under his direction and charge all the mammals on exhibition. In June 1980 Dr. Donald L. Janssen entered on duty as assistant veterinarian. Dr. John Seidensticker, who has been associated with National Zoo on the Nepal tiger project, was hired as staff ecologist.

The administrative office of the National Zoo developed a year-long orientation program for new employees. There is intensive involvement in orienting and training new staff members when they first arrive; then, throughout the year, there is continual contact with the new employee to assure a thorough understanding of the job, the federal personnel system, and the organizational system at the National Zoo. This new program benefits the employees and the Zoo although it will be several years before the results are evident.

#### RESEARCH

The programs in scientific research and conservation areas proceed, as reported above. The tiger study in Nepal is phasing out. Results from the first six years are in the process of write-up. The Venezuelan field study continues, as do studies on the giant Sulawesi civet in Indonesia. In September 1980, three staff members from the Department of Conservation, Front Royal, Virginia, traveled to Sulawesi for longer field studies, trapping, and observations.

A new research project started this year by the staff ecologist is a several-year ecological survey of the flora and fauna at the conservation and research center, Front Royal, Virginia. Tagging, radio collaring, repeated trapping, and observations will be used to assess the wild animal population densities of the area. The relationships of the native animals to each other and the flora, as well as their relationship to the exotic animals, will be studied. John Seidensticker is the principal investigator.

Two books were published by the Smithsonian Institution Press with financial assistance from the Friends of the National Zoo. First was *Migrant Birds in the Neotropics*, edited by Allen Keast and Eugene Morton. This book is based on the seminar held October 1977 at Front Royal. The second book published was *Vertebrate Ecology in the Northern Neotropics*, edited by John

Eisenberg. In the popular vein, Smithsonian Exposition Books published *A Zoo for All Seasons*. This is a factual but popularly written account of the present National Zoological Park.

In August 1980 the National Zoo sponsored a symposium on "Current Trends in the Study of Mammalian Behavior." Twenty-five invited participants came not only from the United States but also Canada, Australia, Great Britain, Germany, and France. The results will be published in the future.

The director of the National Zoo, Dr. T. H. Reed, traveled to the People's Republic of China in November 1979 to participate in the Smithsonian Institution conferences on cooperative scientific programs. Dr. Katherine Ralls's study in inbreeding, as mentioned last year, was published in *Science*, and continues to have an extremely provocative effect throughout scientific circles and the zoo world. She continues her research into this important aspect of animal life.

#### FRIENDS OF THE NATIONAL ZOO

The Friends of the National Zoo (FONZ) have continued with their programs of support in education and science. The guide program for school children continues to provide a worthwhile service to younger visitors. The fourth-grade school programs, which have been developed jointly with the Office of Education, National Zoological Park, continue to be an exciting experience for children. The busing program goes well and is ever more popular with the children and school systems.

This year the Friends of the National Zoo negotiated a renewal of the contracts with the Smithsonian Institution for operation of the gift and food concessions as well as operation for the Institution of the parking concession located at the Zoo.

The National Zoological Park staff appreciates very much the support of the Friends of the National Zoo in the intern and post-doctoral programs as well as support of the Zoo's various scientific programs both here and overseas. Many of these projects would not have been possible without this monetary support. The contributions and support provided by the Friends of the National Zoo to the National Zoological Park's programs and projects benefit the Zoo not only in a monetary way but also in the way of time provided by a group of well-trained, dedicated, and talented volunteers.



Most of the FONZ-generated revenues were derived from sales of food and merchandise and from public parking services. Financial information for *calendar year 1979* is provided in detail below. In addition, a percentage of the restaurant and parking concessions is available directly to the Smithsonian for the benefit of the National Zoo and is reported as income in the Financial Report of the Smithsonian Institution.

### FRIENDS OF THE NATIONAL ZOO

*Financial Report for the Period  
January 1–December 31, 1979*  
[In \$1,000s]

	Net revenue	Expense	Net increase/ (decrease) to fund balance
FUND BALANCE @ 1/1/79 ....			\$ 717
SERVICES			
Membership .....	\$ 173	\$ 154	\$ 19
Publications .....	50	68	(18)
Education <sup>1</sup> .....	28	337	(309)
Zoo Services <sup>2</sup> .....	2,177	1,862 <sup>3</sup>	315
Totals .....	<u>\$2,428</u>	<u>\$2,421</u>	<u>\$ 7</u>
FUND BALANCE @ 12/31/79 ..			<u>\$ 724<sup>4</sup></u>

<sup>1</sup> Excludes services worth an estimated \$140,839 contributed by volunteers to FONZ.  
<sup>2</sup> Includes gift shop, parking services, and food services.  
<sup>3</sup> Includes \$147,152 paid during this period to the Smithsonian under contractual arrangement.  
<sup>4</sup> Net worth, including fixed assets, to be used for the benefit of educational and scientific work at the National Zoological Park.

## *Office of Biological Conservation*

The Office of Biological Conservation (OBC) has continued to serve as the focal point in formulating many of the Institution's responses to requests for scientific information and advice on aspects of biological and environmental conservation in the United States and abroad.

In the interest of developing environmental consciousness among students and the general public, the director of OBC presented an illustrated lecture on "The Plight of the World's Vanishing Flora" at the thirty-fourth annual Williamsburg Symposium, and the coordinator lectured to the Smithsonian's Ecology Docents on the subject of "Endangered Plant Species and Habitat Destruction in the United States." The office has surveyed the status of existing environmental education programs within the Smithsonian bureaux, and is now considering methods of increasing coverage to the public. For the scholarly community, the director presented a lecture on "Assessment of Threatened Plant Species in the United States" at the Symposium on Biological Aspects of Rare Plant Conservation held in Cambridge, England, which included recommendations for standardized national assessment criteria used to determine the endangered or threatened status of plant populations.

A listing of the recommended endangered and threatened plant species of the United States that are currently being cultivated in United States botanic gardens and arboreta was produced by the OBC and submitted to the Botanic Gardens Conservation Coordinating Body of the Threatened Plants Committee (IUCN) as part of a worldwide effort to inventory the material of these species available for research on breeding mechanisms, pollinators, and other factors. The OBC also participated in the United States Interagency Task Force on Tropical Forests, which produced a report on "The World's Tropical Forests: A Policy, Strategy, and Program for the United States." A united federal program to combat tropical deforestation is now being planned under the aegis of the newly created Presidential Task Force on Global Resources and Environment.

The director presented testimony before the Senate Subcommittee on Resource Protection, Committee on Environment and



Public Works, in support of the International Wildlife Resource Conservation Act of 1980, proposed by Senator Chaffee, which confronts the need to integrate wildlife conservation activities with the socioeconomic conditions of underdeveloped countries in order to ensure a balanced development of resources for human needs. The devastating deforestation sweeping through Southeast Asia prompted the OBC's preparation of a situation report describing the exploitation of tropical forests and associated threats to the environment in Sabah (North Borneo). The state of Gujarat, India, has also been the subject of a report concerning the conservation of natural resources and the alleviation of food and fuel problems in this semiarid region. The office has been involved in planning a cooperative project between the Smithsonian Institution and the government of India concerning conservation of gene pools of endangered Indian plant species, particularly those of potential economic and medicinal importance. The OBC is similarly engaged in activities concerning the role of conservation in the development of the Sinai Peninsula.

The Smithsonian Institution Threatened Plants Committee (IUCN) Latin America Program will ultimately provide data on the status of endangered, vulnerable, and rare plant species in Mexico and Central and South America. A bibliography of Central American taxonomic studies, and lists of candidate species for all Central American countries, have been completed by the office to date.

The OBC has continued its support for the Charles Darwin Foundation for the Galapagos Isles and has assumed responsibility for assisting the newly formed Seychelles Islands Foundation in supporting conservation and science efforts on Aldabra. As in the past, the office has assisted in selection of the annual recipient of the Edward W. Browning Award for conserving the environment.

### *Office of Fellowships and Grants*

The Office of Fellowships and Grants (OFG) acts as an Institution center to facilitate and encourage scholarship at the Smithsonian in fields of art, history, and science. It serves as a focus for Smith-

sonian staff and the public regarding academic activities both within and outside the Institution. At present the Office of Fellowships and Grants concentrates on the development and management of two major activities: Academic Programs and the Smithsonian Foreign Currency Program.

The Academic Programs at the Smithsonian Institution support visiting students and scholars. They provide opportunities for research to be conducted at a Smithsonian facility or under the auspices of a Smithsonian staff member. Awards are offered at the undergraduate, graduate, and professional levels.

The Smithsonian also reinforces the quality of its research and extends the reach of its scholarly concerns through the Smithsonian Foreign Currency Program (SFCP), which supports grants to the Smithsonian and outside institutions for research in a limited number of foreign countries. It is particularly responsible for strengthening the international scholarly network of which the Institution is a part.

#### *ACADEMIC PROGRAMS*

Academic programs at the Smithsonian complement those at universities because of the unusual nature of the Institution. The national collections and the curators who study them are unparalleled resources, not available at universities and essential to much scholarly research. In fact, university education is based primarily on the printed word or the study of artifact reproductions. At the Smithsonian historical and anthropological objects, original works of art, natural history specimens, living animals, plants, and entire ecosystems are directly available for study. The combination of class study and field work significantly enhances the educational experience in scholarly training—and the breadth of field opportunities at the Smithsonian is unmatched.

The Office of Fellowships and Grants responds to the Smithsonian's needs for participation in academic activities. The office is also responsible to the student for providing that he or she will benefit to the greatest extent possible from a fellowship or internship experience. This year the OFG, cognizant of these responsibilities, has undertaken special efforts to fulfill them.

The Office of Fellowships and Grants administered a variety of academic appointments in 1980. The program of Smithsonian pre-



and postdoctoral fellowships, begun in 1965, continued this year and sixty-five fellowships were awarded during 1979–80. These appointees pursue a program of advanced research training at the Institution's bureaux for six months to one year. Research topics for this year's Smithsonian Fellows included studies on domestic views of rural America, 1865–1920; archeology of lower Cheyenne River sites; scent mark communication in golden lion tamarins; structural study of new vestimentiferan from the geothermal vents of the Galapagos Rift region; and Anglo-American artists in Worcestershire, England, 1885–92.

The visiting graduate student program had ten participants for ten-week tenures during the summer of 1980. Graduate students studied subjects ranging from the images of the goddess Hsi Wang Mu in medieval Chinese art to Theodore Roosevelt's Smithsonian African Expedition. In addition, support of short-term visitors was continued by the office. Thirty-one visitors spent from one week to one month at the Institution during the past year studying collections or conducting research.

The new Regents Fellowship Program had its first Fellows at the Smithsonian in 1979–80. At the Smithsonian Astrophysical Observatory, Dr. Subrahmanyan Chandrasekhar, the world's leading mathematical astrophysicist, worked on a new book on general relativity. Dr. George Frison, a Paleo-Indian specialist and a leading practitioner of experimental archeology, analyzed, with anthropologists of the National Museum of Natural History, materials from the important Agate Basin site in Wyoming. Collaborating with specialists at the Smithsonian Tropical Research Institute, evolutionary biologist Dr. Robert Trivers was summarizing ten years' work on social evolution to present a single general system of social theory with which to view patterns across many species. One of the most distinguished scholars in the field of Indian Mughal painting, Dr. Milo Cleveland Beach, studied the outstanding collection of Indian Mughal paintings held by the Freer Gallery of Art. An exhibition of these works is planned for 1981.

In May 1980, Drs. Chandrasekhar, Frison, and Trivers participated in the first Regents Fellows Colloquium, *The Pursuit of Knowledge*, and presented a discussion of their life in research.

In 1980 several new appointments for visiting scientists and scholars were made by various Smithsonian bureaux in cooperation

with the Office of Fellowships and Grants. The Harold P. Stern Memorial Fund of the Freer Gallery of Art supported two visiting Japanese scholars for the study of Japanese collections at the gallery. The Smithsonian Astrophysical Observatory (SAO) made an appointment for a visiting scientist to study stellar spectroscopy at its Cambridge, Massachusetts, facility. The Radiation Biology Laboratory (RBL) appointed a visiting scholar from Israel to conduct a one-year research project on the involvement of plant hormones in the flowering process. Similar awards to other scientists will continue to be made by RBL and SAO. This year the Conservation Analytical Laboratory (CAL) established a new fellowship offering for a visiting scientist to pursue a problem in the conservation of artifacts with the assistance of the CAL staff. The first such appointment was made in 1980 for a scientist to study the effect of alkaline rinse on cellulosic textile materials.

Several Smithsonian bureaux also provided direct continued support for fellowship offerings established in earlier years. In 1979–80 the National Air and Space Museum, National Collection of Fine Arts, Smithsonian Astrophysical Observatory, Radiation Biology Laboratory, Chesapeake Bay Center for Environmental Studies, Fort Pierce Bureau, Conservation Analytical Laboratory, National Zoological Park, and International Environmental Science Program offered additional support for fellowship appointments.

Activities in the Smithsonian Fellowship Program this year included a survey of past predoctoral and postdoctoral fellows and the first survey taken of past Smithsonian visiting graduate students and interns. The information from these surveys will be compiled into a report in 1981. Included in the surveys was an invitation from the National Associate Program for past fellows to participate in the regional Associates' programs presented by Smithsonian staff members throughout the United States. Four past Smithsonian Fellows will be featured speakers for these Associate programs during the next year.

The Office of Fellowships and Grants has made a concerted effort this year to work with individual museums and bureaux to strengthen the fellowship program within the host organizations. The National Museum of History and Technology (MHT) has already begun an orientation and seminar program for incoming 1980–81 Smithsonian Fellows. In addition, MHT and the Tropical Research



Institute have appointed staff members to act as academic liaison with the OFG.

A joint program in American Studies was initiated with Smith College for a trial period of two years. Beginning in the fall seven senior-year students from Smith College will spend a semester in residence at the Smithsonian. They will conduct research projects in American cultural history, art history, and the history of science and technology, under the supervision of Institution staff members. In addition, the students will attend two seminar courses taught by Smithsonian staff. The topics for 1980 are American material culture, 1775–1825, and twentieth-century American biography.

OFG assisted in developing two additional internship opportunities in 1980. A one-time internship appointment was made for an undergraduate student to study decorative arts at the Cooper-Hewitt Museum. The student's work revolved around the Cooper-Hewitt portion of the development of a Smithsonian finders' guide to the decorative arts. Also, in response to the increasing interest in internships by staff members, the National Air and Space Museum (NASM) began a program of internships with two undergraduate and one postgraduate summer appointments. These interns were placed in the Education Services Division and the Department of Space Sciences and Exploration, respectively. NASM will continue to provide support for such internships in 1981 and expects to accept interns for academic quarter and summer projects.

The National Collection of Fine Arts and the Hirshhorn Museum and Sculpture Garden provided support for the continuation of their summer undergraduate internship programs. The Cooper-Hewitt Museum also appointed students for internships under the Sidney and Celia Siegel Fellowship Program, and the Division of Performing Arts supported a visiting summer student. The Smithsonian Archives again appointed a student from Gallaudet College to study archival management for the summer. The Office of Fellowships and Grants itself placed twenty-two students under the Open Study Program in 1979–80. Their projects included studies in mammalogy, registration and cataloguing, American brass and copperware, museum accessioning, scientific writing, grasses, museum security, anthropological and folklife photographic archives, museum access for the handicapped, and production methods and technical operations for performing arts events.

Another important step in the area of internships was taken by the office during the summer of 1980 when it conducted an extensive survey of the Smithsonian's wide range of internship activities. Interns come to the Institution through a number of arrangements which vary greatly. It was apparent that information was needed about the scale and range of these appointments in order to take stock of the current situation and begin to develop uniform Smithsonian policy.

#### SMITHSONIAN FOREIGN CURRENCY PROGRAM

The Smithsonian Foreign Currency Program (SFCP) awards grants to support the research interests of American institutions, including the Smithsonian, in those countries in which the United States holds special blocked currencies derived largely from past sales of surplus agricultural commodities under Public Law 480. The program is active in countries in which the Treasury Department declares United States holdings of these currencies to be in excess of normal federal requirements, including, in 1980, Burma, Egypt, Guinea, India, and Pakistan. Research projects are moving toward conclusion under program support in the former excess-currency countries of Poland, Sri Lanka, Tunisia, and Yugoslavia.

This year projects ranged through many disciplines, including archeological mapping of a Theban necropolis; operation of satellite tracking stations in India and Egypt; paleontological investigations in Egypt, Pakistan, and Burma; behavioral observation of langurs in India; and study of puppetry traditions in Egypt and India. SFCP awards enabled scholars to observe phenomenal occasions such as a solar eclipse or centuries-old continuing traditions of performance rituals.

In 1980, preparation continued for the termination, at the end of fiscal year 1981, of excess-currency funds in Egypt. The Smithsonian Foreign Currency Program has been the principal supporter of American archaeological and historical research in Egypt and of the Cairo Center of the American Research Center in Egypt, a consortium of American institutions with research interests in Egypt. The contribution of United States scholars has been highly significant and therefore the Smithsonian continues to urge government and university officials to plan for replacement funding for the future.



The Smithsonian initiated in 1980 a forward-funded reserve for the American Institute of Indian Studies to be used at the time surplus currencies are no longer available in India. The AIIS, a consortium of thirty-two United States institutions, is the most successful United States scholarly presence in India, bringing more than one hundred fellows to that country yearly, operating an archeological documentation center at Benares, and conducting language, translation, and publication programs. The AIIS has received program funding for the past thirteen years. Through incremental appropriations, the Smithsonian hopes to establish a fund of up to \$20 million equivalent in Indian rupees for future AIIS activities.

The Smithsonian received a fiscal year 1980 appropriation of \$3.7 million in "excess" currencies to support projects in anthropology and archeology, systematic and environmental biology, astrophysics and earth sciences, and museum professional fields, and \$500,000 to initiate the AIIS forward-funded reserve. From its inception in fiscal year 1966 through fiscal year 1980, the SFCP has awarded about \$42.5 million in foreign currency grants to 221 institutions in forty states and the District of Columbia.

### *Radiation Biology Laboratory*

One of the most challenging quests of biological research is to discover the mechanism for the regulation of growth and development. This field of science is still in an early stage of development. No general underlying theory exists in developmental biology. To be sure, great advances have been made in genetics and molecular biology, and scientists know a great deal about the way in which information is stored in organisms. In a few organisms, research scientists know how this information is read to provide the instructions for the metabolism and synthesis of materials needed for growth. Nevertheless, little is known of the subsequent steps of development.

Developmental processes are extremely complex. Causal chains of events are difficult to determine. In addition, development and growth are both remarkably resistant to environmental change and at the same time remarkably sensitive to environmental change.

For example, a potato left in storage in a dark place develops a shoot that is white and elongated. It is clear that it is a potato shoot, but its growth pattern is completely different from a shoot that has developed in the light. Thus, all the necessary information for being a potato plant exists in both shoots, but this information is read differently in the light and the dark.

Although many environmental factors influence growth and development, the Radiation Biology Laboratory (RBL) has emphasized the study of light as a controlling factor. Light produces distinctive changes in developmental patterns of plants. Light is also an advantageous experimental probe by which to study growth and development because it can be applied quantitatively in well-defined amounts and because the colors of light which are effective give information about the chemicals that regulate development.

The energy for all growth and development is provided ultimately by synthetic processes driven primarily by sunlight in the process of photosynthesis. Once a source of energy is available, development occurs in response to the environmental factors that regulate the rate of utilization of this energy. The research areas of the Radiation Biology Laboratory this past year have continued to measure these environmental factors and how they regulate development. Specifically, these areas are: (1) regulatory processes of plants, such as membrane synthesis and pigment synthesis; (2) environmental processes and energy flow in biological systems, such as photosynthesis and carbon metabolism; (3) measurement of the amount, duration, and color quality of sunlight present in the environment; and (4) age estimation of biological artifacts based upon their radiocarbon content.

#### REGULATORY BIOLOGY

In order for light to affect a biological system it must be absorbed by a pigment. Carotenoid pigments and their oxygenated derivatives, the xanthophylls, are widely distributed in nature. These pigments are responsible for many of the yellow, orange, and red colors observed in both plants and animals. The carotenoid beta-carotene is important in the diet of many animals because it is a precursor of vitamin A. In many organisms, the carotenoids have been shown to protect against adverse effects of intense visible light.



The biosynthesis of carotenoid pigments is regulated by blue light and/or red light in a wide range of organisms including many bacteria, fungi, algae, and higher plants. In the fungus *Neurospora*, blue light induces carotenoid production. The nature of this blue-light photoreceptor is unknown, although flavins and carotenes themselves are suspected.

Phytoene, a forty-carbon colorless compound, is a precursor of the carotenoid pigments. Phytoene is synthesized from a five-carbon compound, isopentenyl-pyrophosphate (IPP), by a series of reactions. The amount of phytoene synthesized from IPP in cell extracts of *Neurospora* is increased by giving light to the initial intact cells from which extracts are prepared. The conversion of IPP to phytoene by *Neurospora* extracts requires both a soluble and a particulate enzyme fraction. Soluble and particulate fractions from dark-grown and light-treated wild-type and three mutant strains, *albino-1*, *albino-2*, and *albino-3*, have been prepared. All possible combinations of soluble plus particulate fractions were made and assayed for enzyme activity for conversion of IPP to phytoene. From these experiments it was concluded: *albino-3* is blocked in the soluble phase; *albino-2* is blocked in the particulate phase; *in vivo* light treatment increases the enzyme activity in the particulate fraction in wild-type, *albino-1*, and *albino-3* strains, but not in *albino-2*. Thus, light regulates carotenoid synthesis in part by regulating some component of the particulate cell fraction needed for conversion of IPP to phytoene.

These albino mutants can show where in carotenoid synthesis light regulates but cannot show the path between photoreceptor and carotenoid product. Another type of albino (originally isolated by Dr. David Perkins at Stanford), designated *wc* (white collar), may be useful for this purpose. This mutant produces normal levels of carotenoid pigment in the spore-bearing conidia, but not in the vegetative mycelia. In *albino-1*, *albino-2*, and *albino-3* strains, both the conidia and the mycelia show a defect in carotenogenesis. The conidia in wild-type strains of *Neurospora* are known to produce pigment in the dark, whereas light is required for carotenoid production in the mycelia. Somehow, conidia are able to bypass the light regulation process. Therefore, *wc* albinos, *i.e.*, strains showing normal pigment in the conidia, but not in the mycelia, are probably regulatory mutants that are blocked in some part of the initial

light-induction process. In such a mutant, the conidia can still make normal levels of pigment, since the mutation is not in any genes which code for enzymes in the carotenoid pathway (structural genes). The other albino strains are mutated in structural genes, and thus in these strains, carotenoid biosynthesis is blocked in both conidia and mycelia.

The mixing experiments already described were extended to include the *wc* mutant. The level of particulate enzyme activity in this strain is not increased by an *in vivo* light treatment. These results support the hypothesis that this mutant is blocked in the photoinduction process.

The isolation of such *wc* mutants may lead to identification of the photoreceptor pigment. Identification of the photoreceptor would be of fundamental importance because of the distinct possibility that this compound is also involved in blue-light effects in higher plants.

Blue light also induces beta-carotene synthesis in the mycelia of the fungus *Phycomyces*. The same blue-light photoreceptor is believed to control this process in both *Neurospora* and *Phycomyces*. In *Phycomyces*, carotenoid synthesis is a biphasic function of the amount of blue light given. Some beta-carotene is formed in the dark, but small doses of blue light increase the level of beta-carotene synthesized. Further, small increments in blue light do not increase carotenoid synthesis; however, if additional large amounts of blue light are given, more beta-carotene is synthesized. The additional beta-carotene is believed to protect the cells against photooxidative damage from the high intensity light. Measurements of carotenoid synthesized in response to increasing light doses of three wavelengths of light—365, 405, and 455 nm—show that the relative effectiveness of 365 nm light, as compared to 455 nm, increases for large doses. A comparison of the relative effectiveness at these three wavelengths supports the hypothesis that both flavin and carotenoid pigments are involved in the regulation, with carotenoids implicated for small doses and flavins for large doses.

Pigment complexes occur in algae in which accessory pigments are utilized to funnel light energy into the photosynthetic apparatus in environments that are rich in light not readily absorbed by chlorophyll, the usual pigment photoreceptor. These pigment complexes in algae (phycobilisomes) occur on membranes. Studies



have continued on the phycobilisome structure exploring (1) the nature of the phycobiliprotein linking components within the phycobilisomes, and (2) the components of the phycobilisome core, which acts as an energy sink and funnel to the photosynthetic membranes. In phycobilisomes of several species about seven to ten possible linker proteins have been identified. They constitute a small percentage (10–15 percent) of the total protein content and do not contain pigment chromophores. One of the polypeptides, which constitutes about 5 percent of a recombinable phycoerythrin-phyocyanin complex, has been purified for preparation of antisera. Production of antisera will aid in the exploration of the recombination process and enable testing of the species-specificity of the linking components.

Four allophycocyanin pigments, representing the core of the phycobilisome, were isolated and characterized. The role of two of the forms is light gathering, while the other two forms by virtue of their long wavelength absorbing and emission properties are considered to be probable bridging pigments to chlorophyll. Spectra at low temperature and by circular dichroism provided evidence in the latter for exciton interactions. Previously it had been assumed that energy transfer in phycobiliproteins was by a much slower resonance type transfer. Excitation interaction implies a unique structural feature requiring that the pigment chromophores are within 11 Å of one another and probably occur near the surface of the subunits.

Chloroplasts in higher plants contain membrane sacks called thylakoids. The thylakoids contain proteins. Some of the protein polypeptides of the thylakoids are made in the chloroplast on chloroplast ribosomes. Ribosomes that synthesize protein are attached to the surfaces of some thylakoids. It is suggested that these ribosomes specifically synthesize some thylakoid polypeptides as part of thylakoid growth. To determine if this hypothesis is correct, RNA has been isolated from thylakoids, and the messenger-RNA (m-RNA) in it has been translated in a wheat germ extract. The thylakoid-bound RNA that stimulates protein synthesis in wheat germ extract is not polyadenylated. Ninety-five percent of m-RNA activity was recovered in the nonpolyadenylated fraction after chromatography on oligo-d(τ)-cellulose. Cytoplasm m-RNA's are largely polyadenylated. The chloroplast m-RNA's which have been

studied are not polyadenylated. Thus, the finding that thylakoid-bound m-RNA, which is translated in wheat germ extract, is not polyadenylated suggests that what is translated is indeed chloroplast m-RNA, and not the cytoplasm m-RNA's that contaminate the thylakoid preparations. However, which thylakoid polypeptides are coded for by the thylakoid-bound m-RNA has not been determined.

Red light is known to regulate plant growth through the pigment phytochrome. Phytochrome, containing a light-absorbing chromophore, is a protein that can be isolated and purified for laboratory study. An active area of research on phytochrome is the photoinduction of *in vitro* binding of phytochrome to membrane fractions in the plant cell. The goal of these experiments has been to establish the primary action of phytochrome by identifying a specific interaction with another cell component. Light has been found to induce a self aggregation of pea phytochrome in the presence of divalent cations. This aggregation effect makes the quantitation of membrane binding very difficult. It is concluded that light-dependent aggregation could have interfered in most of the studies published to date where it was assumed that phytochrome was binding to membranes.

Alkyl- and omega-amino alkyl agaroses were used as probes of light-induced changes in phytochrome from pea seedlings. It was observed that the surface of the phytochrome molecule becomes more hydrophobic on photoconversion from its biologically inactive form to its biologically active form.

The red-light-induced photostationary state of phytochrome represents the maximum concentration of biologically active phytochrome that can be obtained. A value was obtained of the mole fraction of biologically active rye phytochrome under red light of 0.84. Published values from other laboratories range from 0.75 to 0.81. The calculation and measurement of the mole fraction of active phytochrome is based on the assumption that solutions of phytochrome contain only two components, the active and inactive forms of the protein. However, when only two components are demonstrated to be present, the value is 0.84.

Last year a highly specific binding of the dye Cibacron blue F3GA to phytochrome was reported. The preferential binding to the biologically active form of the protein makes it a probe for an "active site" on the protein. This phenomenon has been used to



develop a purification procedure that yields large amounts of homogeneous phytochrome. Many physical and chemical studies of this protein are now possible using this procedure.

The presence of the green pigment chlorophyll often interferes with the determination of the activity of phytochrome. Herbicides can be added in low concentrations that selectively inhibit the accumulation of chlorophyll. With such plants, the influence of phytochrome can be determined more easily. If duckweed (*Lemna gibba*) is grown in the presence of the herbicide Sandoz under continuous white light of about 600 foot-candles, the chlorophyll content is decreased so that in a concentration of 1 micromolar ( $\mu\text{M}$ ) Sandoz there is virtually no chlorophyll present. Unfortunately, growth and flowering are also inhibited so that it is not possible to obtain bleached material that will flower under inductive conditions. However, under intermittent red light ( $30 \mu\text{W cm}^{-2}$ ), 10  $\mu\text{M}$  Sandoz produces completely bleached plants and stimulates both growth and flowering. Salicylic acid inhibits growth (as it does under white light), but stimulates even more flowering. With 10  $\mu\text{M}$  Sandoz and 10  $\mu\text{M}$  salicylic acid, it is possible to obtain completely bleached plants with more than 50 percent flowering. As the frequency of the exposure to red light is decreased, the flowering response to salicylic acid treatment also decreases. A "daylength dependence" develops that is analogous to the daylength dependence under white light for the salicylic induction of flowering in green *Lemna*.

When the long-day plant *Lemna gibba* G3 is grown under continuous light in half-strength Hutner's medium, flowering is completely inhibited. Ammonium ion is present in this medium, which is known to inhibit flowering in *Lemna*, but flowering is still inhibited in ammonium-free half-strength Hutner's medium. This inhibition can be largely (but not completely) overcome if the phosphate concentration is increased, and if the concentration of the chelator, ethylene diaminetetracetic acid, is decreased.

#### ENVIRONMENTAL BIOLOGY

Solar spectral quality and quantity affect not only the vegetative productivity and growth of plants through photosynthesis but also, in a much more subtle manner, their reproductive behavior.

It has been known since the 1920s that many plants reproduce in response to changes in the relative length of the day throughout the year. This phenomenon is known as photoperiodism. Photoperiodism depends on the presence in the environment of a suitable light signal to tell the plant, with some precision, how long the daylength is, and depends also on an internal detector mechanism required to perceive such a signal.

It has been known for some time that the ubiquitous plant pigment phytochrome is the probable detector molecule or photoreceptor. Phytochrome exists as two interconvertible forms. It was thought that the perception of daylength was related to the time required for one form to revert to the other. Critical measurements of the rates of this interconversion have shown this not to be the case. For at least one economically important group of plants (long-day plants), the reproductive response appears to be mediated by the relative levels of the two forms of the pigment that coexist in specific ratios depending on the quality of the light. It does not seem to depend on reversion of one form to another. This periodic response requires very high energies of light with an optimal spectral composition. As the spectral composition changes from this optimum, the amount of energy required increases.

Laboratory measurements of the spectral composition of solar daylight indicate that, throughout most of the day, the relative energies are suboptimal. At twilight, however, as the total energy decreases, the relative energy shifts toward more optimal ratios. This shift was also found to occur with increasing shade when the light is passed through a series of leaves, as might occur under a forest canopy. Thus, it appears that this shift in relative energy might be the environmental light signal for photoperiodism.

The sensitivity of the plant itself to optimal spectral ratios also changes dramatically during the course of the day. Therefore, even when all of the proper light signals are present, the plant will only respond when they occur at the proper time. This internal regulation appears to be a function of the biological clock of the plant and as such is coupled to numerous other biochemical and physiological events. The mechanism of how optimal ratios of the phytochrome pigment interact with this internal clock and the nature of the clock itself are still unknown.

The water flea *Daphnia* responds to daily stimuli at twilight by



undergoing vertical migrations in its aqueous environment. The stimuli are rapid changes in light intensity, and the strength of the response is controlled in part by the spectral quality of underwater light. Narrow band action spectra of phototaxis (directional movement toward or away from light after a change in intensity) and photokinesis (swimming speed) of *Daphnia magna* were measured in a specially designed chamber that simulates the angular light distribution in a clear underwater environment. The phototactic response of *Daphnia* has a wavelength of maximum response at 570 nm (yellow-green) when the adaptation intensity (intensity prior to a stimulus) is  $1.6 \mu\text{W cm}^{-2}$ . This peak shifts to 440 nm when the adaptation intensity is an order of magnitude lower. When intensities are two decades lower or four times higher, *Daphnia* shows no phototactic responses to light stimuli at any wavelength. The photokinetic response in a constant light intensity is strongest at relatively low intensities and may have slight activity peaks at about 370 nm (ultraviolet) and 685 nm (red). At higher intensities, the peaks are more distinct but are shifted to 570 nm (yellow-green) and 440 nm (blue), which were the peaks observed for the phototactic response.

Light is also the energy source for photosynthesis, and through the photosynthetic process plants provide the energy for the earth's ecosystem. The efficiency of light usage in photosynthesis is very low, around 2 percent. The use of light from electrical conversion to accelerate plant growth has increased in the past decade with the increase in demand for prime horticulture and floriculture products. The electrical energy used is mostly produced from fossil fuels and thereby depletes a nonrenewable resource.

The mode of light applied for plant growth has traditionally been continuous. However, early work on plants under flashing light indicated an increased efficiency in the photosynthetic utilization of light energy by applying the light in a flashing mode, rather than continuously. The increased utilization of flashing light does not affect the molecular conversion of light energy in the photosynthetic process, but depends on the penetration of the light within a multi-leaf layer plant canopy. The penetration of very short flashes (less than 100 milliseconds) is dependent on the morphology of the plant, and the spectral quality and irradiance level of the light.

The photosynthetic efficiency of tomato and lettuce as measured

by the "net assimilating rate" was about 36 percent greater for plants grown under intermittent or continuous red light compared to plants grown under white light of equal irradiance. Lettuce irradiated with intermittent white light gave a 5 to 6 percent increase in the assimilation rate compared to continuous white light.

Environmental factors other than light and CO<sub>2</sub> are important limitations on the photosynthetic capacity of higher plants. In several years of measurements of photosynthesis in communities of salt marsh vegetation at the Chesapeake Bay Center for Environmental Studies (CBCES), a seasonal decline in photosynthetic capacity occurs that is correlated with a seasonal decline in soil and plant water potential.

During the day, leaf water potential of salt marsh species decreases from about -5 bars in early morning to about -35 bars by afternoon, even though soil water potentials within the root zone remain near -3 bars throughout the day. A gradient develops in the plant during the daytime when evaporation of water from the leaf through the stomatal openings reduces leaf water content. Photosynthesis increases the concentration of simple carbohydrates and other small molecules, which further reduces the water potential.

Salt marsh soils are very wet and anaerobic. This condition, along with the presence of salt, can produce a very high resistance to water flow through the roots. Salt, brought into the marsh on normal tidal cycles, is concentrated in the soil when water is lost by evapotranspiration through the plant community. When the water supply from the roots is insufficient to keep pace with demand by the leaf, the plant must close its stomatal openings, thus restricting both water and CO<sub>2</sub> exchange, or wilt. When leaf water stress is sufficient for this to happen, photosynthesis declines. This inhibition occurs during midday when leaf water potentials are low, beginning about two hours before noon, even though solar radiation continues to increase.

The major effort in the RBL radiation monitoring program during the past year has been to develop a stable and highly accurate ultraviolet B (uvb) instrument. This has been accomplished to a degree that permits us to monitor the uvb spectral quality and also determine small variations in total atmospheric ozone. At present, the Radiation Biology Laboratory has a data bank of daily values of uvb that can answer some of the questions concerning the ozone



depletion of the atmosphere and the possible increase in the harmful effects of the UVB.

From a comparison between a Berger-Robertson dosimeter (an instrument commonly used in UVB studies) and the RBL scanning radiometer, it appears that the UV dosimeter is too sensitive to the longer wavelengths of UVB and, therefore, does not track detrimental UV (DUV) energy very well. The dosimeter also appears to have a sensitivity that is dependent on solar elevations. The major problems encountered using the dosimeter, i.e., the fixed sensitivity curve and temperature dependence, are due to the construction of the instrument. This sensitivity curve is not a true DUV curve, and the variation between the two curves starts to become very large (greater than 3x) at 305 nm. Finally, the variation at 320 nm is over 100x and since the 320 nm band has approximately twenty times more energy than the 305 nm band, the weighted variation between the two curves will be greater than 30:1. The investigation also indicates that the dosimeter would deviate further from the true DUV energy in northern latitudes than in southern latitudes and, therefore, cannot track ozone variations or yield biologically significant data better than  $\pm 25$  percent. For these reasons, the RBL scanning radiometer has been developed to provide accurate radiometric monitoring of UVB.

A program was initiated in 1979 to study the spectral quality of light underwater. The site chosen for the study is an estuary at CBCES. Three systems units have been constructed for this purpose: two stationary monitoring units and one portable measuring unit. The portable unit is presently in operation. The two monitoring units were put in place in summer 1980. One of the monitoring units is located underwater about 400 feet from the shore where the terrestrial unit is mounted. Total power for operating these systems is coming from photovoltaic solar panels. Storage of electrical power from the panels is accomplished with ordinary lead-acid batteries.

The work over the past year has yielded new information on silicon detectors and possibly some new information on the degradation of terrestrial solar panels. It was found that blue-sensitive silicon becomes less responsive to the blue portion of the solar spectrum as the cell ages in a terrestrial environment. This could explain, in part, why unencapsulated photovoltaic solar panels made of silicon degrade rapidly under these conditions.

#### CARBON DATING LABORATORY

The laboratory provides analytical service for the research interests of the Institution staff in providing radiocarbon chronologies for samples of archeological and geological interest. Additionally, a major portion of laboratory research continues to focus upon the early occupations of the Americas and upon the investigation of relationships between changing environment and changing cultures. Geologic, cultural, and climatic chronologies are being developed for a number of Early Man sites in Brazil and Chile, as well as Alaska, Washington, Colorado, and Wyoming, many of them in association with now-extinct megafauna. Continued refinement of cultural developments at two sites in southeastern Alaska now provide very strong circumstantial evidence of the use of water transport there as early as 10,000 years ago and warrant reconsideration of the mode of the early migrations from the north.

Fossil fresh-water algae recovered from melt-water deltas in the Lake Vida region of Antarctica have been dated to determine times of major warming trends there. Initial results correlate well with the Two Creeks event in Wisconsin and with dates obtained from samples in Alleröd-age deposits along the coast of Norway. To the north, dated shells from raised beach deposits on Spitzbergen suggest warming and glacial melting there at about the same time. This project continues in an effort to correlate worldwide sealevel changes and short-term climate changes with major events taking place in the Antarctic ice sheet.

Sediments cored from the Sea of Marmara and the Hellenic Trench in the eastern Mediterranean have been dated to determine the extent of correlation with late Pleistocene/early Holocene current reversals discovered earlier in a dating project at the Strait of Gibraltar. Additional mercury shielding for the counting apparatus has been devised in an effort to decrease counting time and to increase precision in the dating of very small samples.

#### *Smithsonian Astrophysical Observatory*

As the new decade commences, two major observing tools—both conceived and designed by Smithsonian astronomers in collaboration with colleagues at other institutions—have now enjoyed a full

year of operation. And, as it was hoped, the x-ray telescope (Einstein Observatory) flown onboard the High Energy Astronomy Observatory (HEAO 2) satellite and the Multiple Mirror Telescope (MMT), a joint project of the Smithsonian Institution and the University of Arizona, have fulfilled the promise of introducing new eras in astronomical research.

Since their respective moments of "first light," these innovative instruments have provided the international scientific community with an abundance of new data. For example, as a member of the Smithsonian's Einstein team has remarked, "In only one series of observations of the Andromeda Galaxy (M 31), Einstein essentially doubled the x-ray information acquired in ten years of previous observations."

The record for the MMT is equally impressive. Early observations with this unusual instrument resulted in the discovery of a new class of pulsating white dwarf stars and helped confirm one of the most exciting developments in recent astrophysics—the observation of the gravitational lens effect. More important, the performance of the Multiple Mirror Telescope has led to its being hailed as the prototype for a future generation of large telescopes by the participants in the workshop sponsored by Kitt Peak National Observatory.

Similarly, early this year, results from the Einstein Observatory dominated the agenda at the meeting of the High Energy Astrophysics Division of the American Astronomical Society in Cambridge. As pointed out by Riccardo Giacconi, principal investigator of the Einstein (HEAO 2) program, the x-ray telescope aboard the satellite provided researchers with one thousand times greater sensitivity than previous detectors and, thus, has the potential for producing much new information on extremely faint x-ray objects and objects at great cosmological distances.

Among the results reported at the meeting sponsored by the Harvard-Smithsonian Center for Astrophysics was an unexpected finding: Virtually all stars emit x-rays! In an early observation, a cluster of O stars seen in the gaseous nebula Eta Carinae appeared, in x-rays, more than one million times brighter than the sun. Subsequent observations, on other classes of stars, supported the view that faint optical objects were emitting as much as or more x-radiation than our sun. It was also found that many so-called nor-



mal stars of the same size and spectral character as the sun were as much as five hundred times brighter in x-rays. These studies, it is hoped, will lead to the description of a new method to account for the prevalence of x-ray emission from diverse classes of stars and an explanation for the wide range of x-ray luminosities seen within each stellar class.

The Einstein has also made a unique contribution to the study of bright extragalactic objects at very great distances. Because the Einstein is capable of "finding" objects such as quasars at distances corresponding to the very earliest age of the universe, and since the Einstein "deep" surveys have so far shown that the explanation for extragalactic x-ray background is in good agreement with the suspected contribution from quasars, some preliminary conclusions concerning the question of an open or closed universe are implied. It is suggested that the missing mass of the universe, once assumed to be produced by an x-ray-emitting hot gas, is not present and, therefore, that the universe could continue expanding indefinitely.

For those astronomers who use ground-based instruments to carry out their observation programs, the MMT has provided many new opportunities for research and demonstrates the potential for considerable future advances. For example, the telescope has proved to be receptive to the adaptation of existing instrumentation; an echelle spectrograph and a Fourier transform spectrometer developed in Cambridge have both been successfully operated in conjunction with the MMT in Arizona. Already, observing time has increased to 70 percent, with the remaining time allotted to engineering tests and adjustment. Indeed, in its first operating year, astronomers are becoming increasingly aware of the high-quality "seeing" afforded by the Arizona mountaintop location, and expect that resolution to one-half arcsecond can be achieved. Future improvements, including the completion of the active optics system, will allow resolution that approaches one-tenth arcsecond.

In recent observations, the MMT captured a second example of the gravitational lens effect. Earlier observations with the telescope indicated that the spectra and redshifts of "twin quasars" discovered optically by an instrument at Kitt Peak were nearly identical. The new discovery involved the University of Arizona's 90-inch telescope, which supplied the optical data, and spectroscopic observations by the MMT, which confirmed that the "triple

quasar'' was, in fact, a single, distant quasar distorted by some unseen object, most likely a galaxy, between it and observers.

Instruments, no matter how innovative and advanced, are still merely tools to be used in the pursuit of information. Data must be analyzed and interpreted to explain and describe the observed richness of the universe. This interpretation remains the task of the Smithsonian Astrophysical Observatory (SAO) scientific staff, and, thus, it was with great pride that the observatory received the news that Harvard Physics Professor and SAO staff member Steven Weinberg had been awarded the 1979 Nobel Prize in Physics for his contributions to the understanding of the fundamental forces of nature. He and other investigators worked both separately and in collaboration to develop mathematical theories that suggested that two of the four basic forces in nature—the electromagnetic and the so-called weak—may be different manifestations of the same phenomena. The combining of the two forces is considered a major step toward the long-sought Grand Unification Theory, a single formula that would explain the four forces (i.e., weak, strong, electromagnetic, and gravitational) controlling the physics of all matter in the universe.

The Smithsonian Astrophysical Observatory is a member, with Harvard College Observatory (HCO), of the Center for Astrophysics headquartered in Cambridge, Massachusetts. The facilities and resources of each observatory are combined in this joint enterprise, with research interests organized by divisional programs.

#### *ATOMIC AND MOLECULAR PHYSICS*

The major objective of the Atomic and Molecular Physics Division's research is to increase knowledge of the processes and parameters of atomic and molecular physics that are fundamental to all branches of astronomy.

In the laboratory, measurements are carried out of the cross-sections for electron excitation, autoionization, and photoionization of atoms and of  $gf$ -values of allowed and forbidden radiation transitions in atoms and molecules. The Ion Beam Facility is now fully operational and calibrated and an inclined beams arrangement has provided the means to measure the absolute cross section for electron excitation of the  $2s - 2p$  transition in C IV at 155 nanometers. Experiments are also under way with the Ion Beam Facility

to determine basic properties of multiply charged ions found in high-temperature astrophysical plasmas and in laboratory plasmas being developed by the Department of Energy.

During the last two years, collaborative investigations of the ultraviolet spectra of binary x-ray sources, globular clusters, and supernova remnants have been carried out with the International Ultraviolet Explorer (IUE) satellite telescope. Contributions to the IUE studies have been most substantial in work on interstellar absorption lines and on the behavior of the massive binary system VV Cephei during eclipse. A current observing program with IUE concerns the study of interstellar lines in regions near x-ray sources. Analysis of lines of highly ionized species is revealing directly the effects of x-ray sources upon the ionization balance of surrounding interstellar matter.

IUE was also used during the latest rare eclipse of VV Cephei (period  $\cong 20$  years) to watch the OB secondary emerge gradually from behind the extended atmosphere of the M2Iab primary. A striking fluorescence spectrum was seen in the ultraviolet while there was a very large optical depth through the cool atmosphere to the hot star, but as the eclipse progressed, this was replaced by a low-excitation absorption spectrum. Spectra continue to be obtained of this and related binary systems in the hope that a detailed model of the structure of the cool atmosphere can be constructed from these data.

Research on the application of atomic and molecular processes to the study of comets and the terrestrial atmosphere continues. In particular, attention was focused on the response of the earth's atmosphere and cometary coma to the substantial ultraviolet flux increase occurring during the present solar cycle in conjunction with the Atmospheric Explorer Satellite program. A continuing joint program with Lick Observatory for the study and interpretation of the Lick comet plate collection yielded valuable data on the composition of the comet nucleus.

It has been pointed out earlier that double photoionization is an important source of doubly charged ions in the thermospheres of the terrestrial planets. Studies of the photochemistry of  $O^{++}$  are showing significant effects in the densities of minor ions in the upper atmospheres of the Earth, Mars, and Venus, and possibly on the nonthermal escape of nitrogen from Mars.



## HIGH ENERGY ASTROPHYSICS

The activities of the High Energy Astrophysics Division are concentrated in three main areas: the acquisition and analysis of data obtained by the HEAO-2 (Einstein) satellite; the acquisition and analysis of data from other satellite, rocket, and ground-based observations; and the development of new instrumentation for future missions. In general, however, the division's effort has been dominated by the successful operation of the Einstein satellite, for this spacecraft carries the first x-ray telescopes capable of providing focused images of x-ray objects in space.

For example, the deep x-ray survey utilized the ultimate capabilities of the Einstein Observatory to study the nature of the extragalactic x-ray background, contributing much to the study of distant quasars, the study of x-ray sources in the galaxy M31, and the study of the x-ray emission from radio galaxies Cen A and Cyg A and also from clusters of galaxies.

The studies of clusters of galaxies at cosmological distances included the discovery of apparent evolution in the temperature of these clusters as well as placing quantitative limits on their luminosity evolution. Nearby rich clusters of galaxies were observed with the Einstein, and the x-ray observations were compared with optical studies to produce a new, albeit tentative, classification system for defining clusters as those dominated by a single central galaxy and those lacking any central condensation.

The study of clusters of galaxies and galactic halos also included the measurement of the mass of M87's halo from the distribution of the x-ray emitting gas, and the analysis of Perseus cluster x-ray data. In a related study, an extended x-ray source centered on the elliptical galaxy M86 was found to be the result of ram pressure stripping of the galactic gas by the gas pervading the Virgo cluster. The galaxy itself could retain its internally generated gas during the period it spends far from the dense cluster core.

Other x-ray astronomy studies conducted with the Einstein Observatory included the precise location and, thus, determination of masses of sources within globular clusters; the first x-ray imaging and time-resolved spectral studies of an x-ray burst (from the globular cluster Terzan 2); time resolution studies of a gamma-ray burst; imaging and spectral studies of the unusual optical object known as SS433; a study of emission from flare stars; the

analysis of x-ray emission from supernova remnants and from radio pulsars; and a study of the Crab Nebula and associated pulsar that has led to the first measurement of the "off" state flux from the Crab.

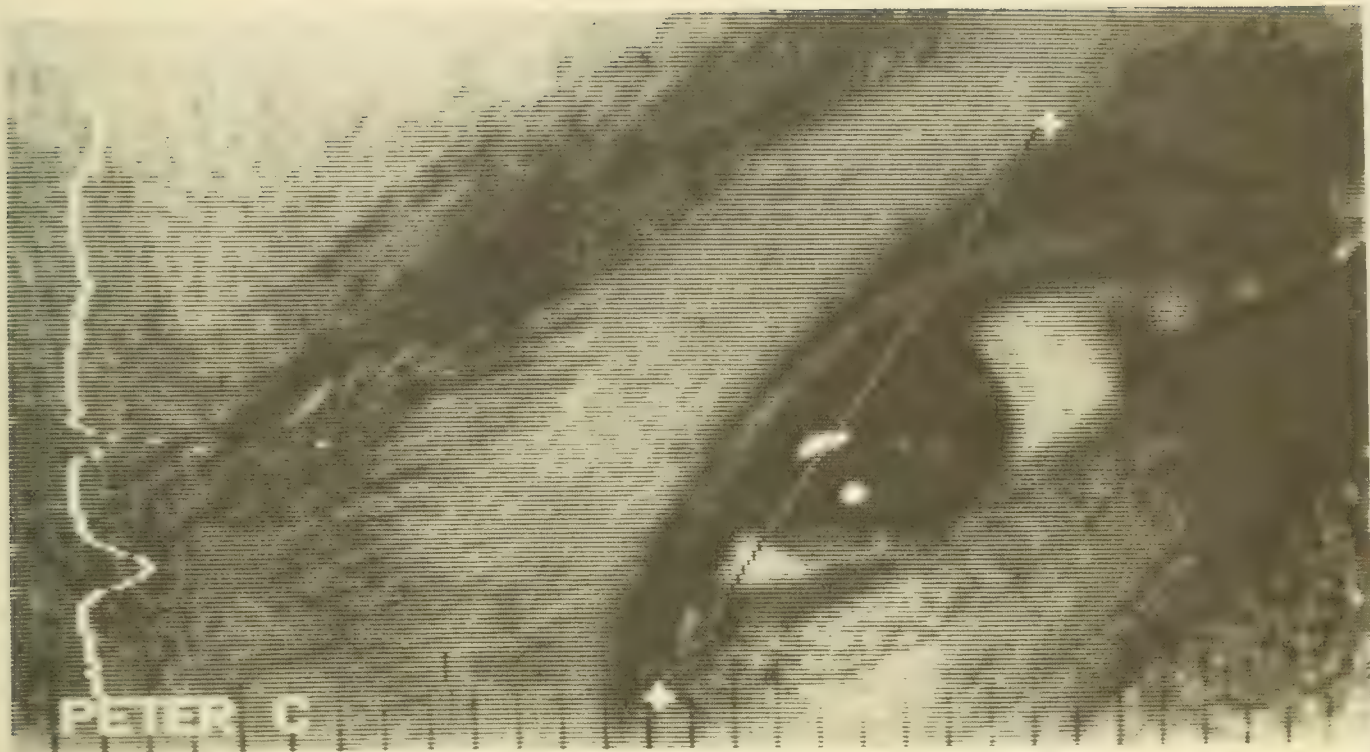
One of the most productive areas of research with the Einstein Observatory has been the study of the x-ray properties of quasars. Emphasis has been on finding correlations between x-ray luminosity and optical luminosity, between x-ray luminosity and radio luminosity, and between x-ray luminosity and redshift. Observations have been interpreted as requiring two mechanisms for x-ray production in quasars. Calculations of the contribution of quasars to the diffuse x-ray background have been refined with the conclusion that quasars are a major contributor to the x-ray background. Furthermore, the limit set by the diffuse x-ray background constrains the number of optically faint quasars and provides support for models in which quasar evolution is predominantly luminosity evolution and not pure density evolution.

Optical astronomy research carried out with the 4-meter telescope at Cerro Tololo InterAmerican Observatory led to the discovery of six x-ray-selected quasars and of new correlations between optical emission lines and x-ray luminosity in quasars. Additional observations of these quasars were conducted with the MMT at Mt. Hopkins. Infrared observations of Einstein x-ray sources were conducted with the 3-meter telescope at Mauna Kea Observatory, Hawaii.

Observations of extragalactic x-ray sources with the SAS-3 satellite continued. And, on March 22, a sounding rocket was launched successfully from White Sands, New Mexico. On board was a solid-state spectrometer used to measure the line strengths of C V, VI and O VII, VIII, which are emitted from the hot component of the interstellar medium. Preliminary results confirm the presence of the hot component at a temperature of approximately  $1.1 \times 10^6$  K.

Among the major space instruments planned for the future, and now being studied within this division, is the 1.2-meter x-ray telescope and the Advanced X-ray Astrophysics Facility (AXAF). In addition, the division is also engaged in the development of detectors such as a Charge Coupled Device (CCD) x-ray camera and a





To test light-sensitive silicon chip cameras for astronomical telescopes, SAO scientists take a series of photos measuring response to brightness. In this image of a human eye, an electronic cursor draws a line across the pupil while changing intensity of light is plotted at *left*. The gleam in Peter C's eye shows surface brightness twice that of the white of his eye. *Below*. The new air exhaust system installed on the Mt. Hopkins Multiple Mirror Telescope allows venting of warm air from the observing chamber. Reduction of the rising warm air current here will improve the "seeing" of the telescope, already cited as one of the world's best.





Scintillating Imaging Proportional Counter for use in the focal plane of imaging x-ray telescopes. These detectors will combine moderate energy resolution and high quantum efficiency with high spatial resolution and moderate spatial resolution, respectively. Other instrumentation developments include Negative Electron Affinity Devices, as well as improvements in existing detectors such as the High Resolution Imaging Detector in use on the Einstein Observatory.

#### *OPTICAL AND INFRARED ASTRONOMY*

The Optical and Infrared Astronomy Division is involved in programs of new facility and instrumentation development, space astronomy, and extragalactic and stellar astronomy.

The Multiple Mirror Telescope (MMT), which is rapidly approaching full operation status, is a joint project of the University of Arizona and the Smithsonian Institution located at the Mt. Hopkins Observatory in Arizona. During the past year, use of the telescope for scientific observing has increased from 50 percent to 70 percent of the nights.

Two new detectors were brought into operation on the MMT: a photon-counting Reticon for spectroscopic applications and an RCA CCD camera for direct imaging. The spectroscopic detector was used with great success on the MMT in May and June. These instrument developments culminated in the confirmation of the second example of a multiple quasar produced by a gravitational lens. In addition, the MMT was utilized in a program of high-resolution (25 kilometers per second) measurements of emission lines from the nuclei of Seyfert galaxies with the Fourier transform spectrometer.

Observations of several emission lines in the visible part of the spectrum of NGC 4151, which used the echelle spectrograph on the Mt. Hopkins 60-inch telescope with the intensified Reticon detector, have also been made. Comparison of these line profiles with the Ne II line and with each other should show how gas clouds moving at various velocities compare in degree of excitation and in the amount of obscuration by dust (through which the 12.8-micron radiation will penetrate).

A small helium-cooled infrared telescope is being prepared for space flight aboard the Shuttle-borne Spacelab 2 in partnership

with the Steward Observatory of the University of Arizona and the Space Science Lab at NASA's Marshall Space Flight Center. The slow scanning telescope will provide data for mapping of diffuse infrared radiation and for studies of Shuttle-induced contamination in a near-earth orbit. The superfluid helium refrigerant, one of the largest volumes of this substance to be flown in space, will provide a test and demonstration of helium management techniques.

In October 1979, the balloon flight of the 102-centimeter telescope carried the high-resolution, far-infrared Fourier transform spectrometer (FIRS) to an altitude of 95,000 feet. At this altitude, it spent about ten hours measuring the far-infrared spectra of the Orion nebula, the M17 molecular cloud, and the terrestrial stratosphere. Preliminary results include the first detection of a large number of spectral lines from shock-wave excited carbon monoxide in Orion, as well as the first far-infrared measurement of stratospheric HCl, and the first detection of stratospheric peroxide, the latter two being important with regard to the chemistry of the ozone layer.

Reduction of data from earlier flights of the balloon-borne telescope continues. The first far-infrared map of a giant molecular cloud and the follow-on observations of radio continuum and molecular line observations have shown that star formation is occurring throughout the cloud, not just at the end of the cloud containing the bright H II region, as previously thought. It is now important to understand what mechanism could have triggered the star formation simultaneously over such an extended region. Also, the first far-infrared map of the highly evolved H II region, M 16, was produced. This study of M 16 is important in understanding the later stages of evolution of star-forming regions. The first measurement of the far-infrared size of the extended dust cloud surrounding the carbon star, IRC+10216, was acquired, and it was determined that the mass loss from the star had to be considerably larger only two thousand years ago.

A survey of the redshifts of galaxies to  $m = 14.5$  in the northern hemisphere is now 99 percent complete. The Mt. Hopkins 60-inch telescope has been used in the mapping of the density and velocity field around the Virgo cluster. As a result, the measurement of the cosmological density parameter has been determined to be



$\Omega = 0.4$ . Systematic studies of mass-to-light ratio of elliptical galaxies are now possible with this large data set.

Other ground-based studies include an extragalactic photography and photometry program using the new RCA CCD camera, which this year concentrated on the newly discovered binary quasar and cD galaxies. New images were taken of cD galaxies in both poor clusters and rich clusters in an attempt to determine several structural parameters (size, absolute magnitude, occurrence of multiple nuclei, for example) as a function of cluster richness. An additional cD galaxy study is under way to obtain CCD images and Z-machine spectra of galaxies with multiple nuclei for a comparison with x-ray images.

Other programs included the extension of studies on the extragalactic distance scale and determination of the Hubble ratio out to the Hercules cluster at  $v = 10,500$  kilometers per second.

#### PLANETARY SCIENCES

The Planetary Sciences Division continued its investigations of solar system topics, particularly those relating to the smaller bodies and to the origin and early history of the solar system.

For example, the century-old problem of the variable nongravitational motion of Comet Encke has been solved. It was found that the effect arises from the precession of the polar axis of the oblate nucleus induced by the jet action of sublimating ices. Because of the upcoming 1985 apparition, Comet Halley has come under special investigation. An activity map of the surface based on its period of rotation,  $10^h 19^m$ , is planned. The rotation periods of some eighty other comets are also under study in an attempt to ascertain whether spin-up by sublimation occurs systematically with comet age.

Other comet studies included an investigation of the asymmetric emission of four short-period comets. These studies used methods based on two models in which the observed peak activity was assumed to be, respectively, controlled by the surface insolation pattern and dominated by outgassing from a single active area on the rotating nucleus. Research by one division member on the dust tail of Comet Halley in 1910 and 1835 led to a dust production model for large particles. This work was extended to serve as the basis for a preliminary design concept of the dust-hazard shield for the proposed Halley fly-through spacecraft.

A photograph obtained during the March 1979 encounter with Jupiter by Voyager I has showed a bright fireball on the jovian nightside. The phenomenon, believed to have been produced by an infalling meteoroid of mass 11 kilograms, is approximately ten times more likely to occur on Jupiter than on earth, based on a comparison of elapsed time of the observation (20 minutes) with the total time spent searching for fireballs.

An examination of the evolution and stability of certain orbits in the lunar saturnian system has indicated that the two satellites recently discovered this year move in essentially the same orbit but  $180^\circ$  apart and, at the same time, are in resonance with the well-known satellites, SII and SIV.

A variety of programs ranging from attempts to detect extra-terrestrial neutrinos to the study of polar ice has been carried out by a division scientist. A by-product of the research on extra-terrestrial neutrinos is an interesting limit on the lifetime against decay of neutrons and protons. The studies on polar ice have led to detections of time variations in the carbon dioxide content of the atmosphere over the past few thousand years and have resulted in the development of a radon counting technique for the determination of the ages of ice samples.

Research on the early history of the solar system continues with the development of a model for the origin of the earth via accretion from a heliocentric planetesimal swarm, with the distribution of eccentricities of planetesimals a variable input. In this model, net angular momenta of materials captured by the earth and (via disintegrative capture) by the terrestrial protolunar swarm are assessed, as well as amounts of crustal, mantle, and core material from the disrupted planetesimals. The rationalization of the angular momentum of the earth-moon system and the composition of the moon is anticipated.

Other studies of the early history of the solar system include the computation of evolutionary model sequences of giant gaseous protoplanets subject to imposed surface boundary conditions intended to represent embedding in the primitive solar nebula. Conditions were found in which the evolution of the protoplanets could be accelerated or retarded and in which the envelope could be evaporated away.

A consortium to carry out a detailed study of the petrology,



chemical composition, and age dating of rock Apollo 16 Breccia 67015 will be led by a division geologist. Preliminary to this appointment was the examination and preparation of maps and descriptions of this breccia for a guidebook, published and distributed by the Curator's Office, Lunar Science Institute, Houston, Texas.

The International Astronomical Union's Central Bureau for Astronomical Telegrams, located at the Center for Astrophysics, continued under the direction of a division member. This year, some 115 *IAU Circulars* and some 30 telegram books were issued; the IAU's Minor Planet Center, also located on the premises and directed by the same staff member, issued some 650 *Minor Planet Circulars* during the year. Much progress was made in the improvement of the Minor Planet Center's data base in machine-readable form. Work is also nearing completion on the comprehensive catalogue of orbital elements of unnumbered minor planets, which will contain about 1900 orbits and extensively revises and corrects an earlier source.

#### RADIO AND GEOASTRONOMY

The combined research of the Radio and Geoastronomy Division concentrates on related programs in Very Long Baseline Interferometry (VLBI), atmospheric research, and maser clock development and relativity. The division also administers SAO's Satellite-Tracking Program.

By use of an intercontinental array of VLBI antennas, the radio astronomy group has developed a new technique for estimating astronomical distances. The new method, similar to the statistical parallax method used by optical astronomers, involves the determination of the relative position of the spots in maser sources by VLBI measurements and a comparison of the spectral components of the source's spectrum to a bright spot on the sky having a diameter of  $\sim 1$  astronomical unit. The group now reports an accuracy approaching 50 microarcseconds in the measurement of the relative positions of the spots in several maser sources.

The study of the proper motion of thirty-five maser sources in the Orion Nebula resulted in the determination of a pattern that can be explained by a large-scale outflow of material from a central infrared emission object that is optically obscured. The group sug-

gests that this object is a newly formed massive star with a strong stellar wind. By comparing the transverse and radial motions of the spots, they estimate the distance to the maser at  $480 \pm 80$  parsec. With this new method, attempts are planned to measure the distance to star-forming regions throughout the galaxy and in nearby galaxies with detectable masers.

The VLBI group has also used the array in the continental United States to make an aperture synthesis image of the OH maser emission in the galactic H II region W75N. The maser spot distribution suggests that the stellar envelope is rotating at 10 kilometers per second. Using the VLA, compact H II regions in the vicinities of OH and H<sub>2</sub>O masers have been mapped. The H II regions found are usually smaller than 1 second of arc and are probably caused by the ionizing radiation from newly formed stars of spectral type as late as B3-4.

Radiofrequency studies of the hot ionized central regions of the Milky Way Galaxy have resulted in the identification of the following: a ring of hot, dense nebulae, intermixed with molecular clouds, orbiting about and expanding from the center; a region of warm, tenuous gas spread throughout the thousand-light-year extent inside the ring; and a unique region of hot, dense, swirling gas at the very center of the galaxy.

In geophysical research, observational data from several satellite experiments (the mass-spectrometer measurements of ESRO4, Atmospheric Explorer C, and the Air Force's S3-1 satellite, in particular) have provided the base for the development of an improved model of the earth's thermosphere and exosphere. While the work encompasses all aspects of the neutral upper atmosphere, the main emphasis is on the geomagnetic variation and the diurnal variation, the two areas most in need of improvement in present models. The work has concentrated on the geomagnetic variation with the objectives of improving the modeling of the latitudinal profiles of exospheric temperature increase with respect to the level of geomagnetic disturbance and including variations in the profile with local time. Concurrently, a study of the time delay between a geomagnetic disturbance and its atmospheric effect and of the persistence of the atmospheric effect is also in progress, and an attempt to model the transition from a mainly diurnal model of temperature and composition variation in the region above 300

kilometers to a predominantly semidiurnal mode in the lower thermosphere.

A member of the division has continued his research on the technical aspects of the use of long orbiting tethers. The Skyhook concept has been modified to test the theoretically more energy-efficient use of a tether for payload orbital transfer rather than the use of chemical rockets.

Research on relativity carried out by members of the division includes an investigation of a new concept of time synchronization and frequency comparison by using a hydrogen maser clock in an earth-orbiting satellite. This frequency comparison accuracy is at the  $10^{-14}$  level and timing accuracy is at the subnanosecond level for any station on earth.

The use of maser clocks, which have been demonstrated to have fractional frequency stabilities at the  $10^{-16}$  level in spacecraft, has led to new concepts for testing relativistic gravitation and, in particular, for detecting gravitational radiation. Also under study is the use of a time-correlated multiple-link doppler system for detecting very low frequency ( $10^{-3}$  Hertz) pulses of gravitational radiation and for improving the precision of doppler tracking for a close approach solar probe mission to measure the mass distribution of the sun.

The successful operation of a cryogenically cooled hydrogen maser at temperatures as low as 26 K has been achieved. A program of development and testing is now under way using two separate, newly constructed cryogenic masers. Demonstration experiments of relative stability data below the  $1 \times 10^{-16}$  level for time intervals of 600 seconds are in progress.

The final results of the 1976 rocket probe redshift experiment were reported; and predictions of General Relativity were found to be valid at the  $70 \times 10^{-6}$  level.

As in the past, the SAO Satellite-Tracking Network provided laser tracking coverage for geophysical research at SAO and other organizations in the United States and abroad. This year, tracking focused on the high-orbiting LAGEOS satellite as well as others in near-earth orbits. A total of five thousand passes of decimeter accuracy data will be acquired before the year is finished.

The satellite data acquired were used in investigations of polar motion, earth and ocean tides, crustal motion and deformation, and in the determination of the gravity field and its temporal varia-



tions. SAO continued in its role as coordinator and United States interface for overseas laser tracking participants and, in particular, acted as a coordinator and computations center for the MERIT Campaign, an International Astronomical Union/International Union of Geodesy and Geophysics program to monitor polar motion and earth rotation.

The accumulation of six years of laser ranging data on three satellites was used to measure global ocean tides by means of satellite perturbation analysis. This same study also provided measurement of earth body tides, and the determination of the near diurnal core mantle resonance and the semiannual tide for the first time.

Routine calculations of the earth's polar motion with laser range measurements by LAGEOS are under way, and pole positions are provided to the Bureau International de l'Heure every five days. A successful combination of satellite-to-sea-surface altimetry data, oceanic hydrographic data, and surface-gravity data led to the calculation of a model of ocean circulation in the North Atlantic.

#### *SOLAR AND STELLAR PHYSICS*

Research activities in the Solar and Stellar Physics Division focus on understanding the physical processes in the sun and the stars. Major analysis programs center on data returned by Skylab with both the extreme ultraviolet spectrometer (EUV) and the Apollo telescope mount (ATM), by the HEAO 2 (Einstein Observatory), and the flight of the Lyman Alpha white light coronagraph.

Skylab studies concentrated on magnetically confined plasma structure in the corona—for example, bright points, active region loops, sunspot loops and prominences.

The analysis of Skylab's EUV data on bright points showed quantitatively for the first time that bright points evolve and change in brightness over time scales as short as 5.5 minutes, the shortest time scale available from the data. This discovery suggests that the coronal heating in bright points is due to an intermittent impulsive heating mechanism, most likely one that releases energy stored in the coronal magnetic field.

The investigation of temporal variations in coronal heating has been extended to a study of heating in active regions and polar plumes. The latter features are of particular interest because of

the suggestion that they are a source of coronal mass loss in coronal holes (which are a major source of high-speed solar wind streams). Thus far, no significant evidence for temporal variations in the brightness of polar plumes or the bright points that underlay them has been found.

A major accomplishment during this year was the completion of the preliminary Einstein Observatory stellar survey, which revealed that stars of virtually all types are x-ray emitters. Of particular importance is the fact that both very early (hot) and very late (cool) stars have x-ray emission substantially greater than predicted by "standard" theories of shock-heated stellar coronas. These new observations, combined with previous (Skylab) solar x-ray and EUV observations, have led to theoretical studies of coronas heated by dynamo-generated magnetic fields.

A vigorous program of the International Ultraviolet Explorer (IUE) studies continued. Ultraviolet observations of Cyg X-1 were analyzed in order to produce tighter constraints on the inclination of the system and the mass of the compact object. Observations of cataclysmic variables led to the conclusion that nuclear burning is the most plausible explanation for the 10–40 eV "blackbody" continuum emission components. Study of the Hyades giants showed a surprisingly large difference in transition-region emission for stars of the same age. The presence of high temperature species (C IV and Si IV) have been found to occur mainly but not necessarily around hot early-type stars and, it is thought, may result from photoionization of an H II region close by the star. And, surface activity on stars of the RS CVn type have been studied by using both IUE and ground-based high-dispersion observations from the Mt. Hopkins Observatory.

The Lyman Alpha white light coronagraph, flown aboard a rocket for the second time in February 1980, produced high-resolution profiles of the Lyman Alpha profile scattered by coronal hydrogen. Data are being analyzed, but initial results have shown, for the first time, the temperature in the high solar corona between 1.5 and 3.0 solar radii. Results of a detailed definition study, performed to investigate the use of an improved version of the instrument on a seven- to fourteen-day Spacelab mission, indicated that the experiment has, potentially, the capability to obtain unique spectroscopic information.

Under the Smithsonian-supported Langley-Abbot Program of Solar Research, a study of the solar flare of September 7, 1973, has been completed. It was determined that the flare exemplifies a class of transient events that are characterized by the disruption of the magnetic configuration, by continuous energy deposition, and by prolonged injection of mass possibly from the associated prominence.

The joint Harvard-Smithsonian Speckle Image Reconstruction Program saw valuable progress made during the past year. Important technical developments include completion of the video data-recording and digitization system, development of a photon noise bias compensation procedure, and the testing of both the camera and processing procedure at very low photon levels and the extensive testing with real and laboratory-produced data. Full image reconstruction of the 0'.05 separation binary star Capella from fewer than 25 speckle images taken at the 5-meter telescope indicated that diffraction-limited image recovery is possible at even the largest telescopes.

#### THEORETICAL ASTROPHYSICS

The Theoretical Astrophysics Division carries out research on a diverse range of astrophysical phenomena, with theoretical studies often applied to the support and interpretation of observational data. This year, valuable progress was made in the understanding of magnetic fields, photodissociation processes, interstellar clouds, globular clusters, accretion flows and mass outflows, galactic structure and formation, radiation processes, and the effects of x-rays.

For example, analysis of x-ray data from the Einstein Observatory on M87, an elliptical galaxy in the center of the Virgo cluster of galaxies, led to the discovery that M87 had a massive halo equal to about  $10^{13}$  solar masses. Satellite data have also been used by another member of the division in a study of large-scale structures in the universe, in which cross-correlation techniques are used to set interesting upper limits on the contribution of various types of discrete sources to the background. So far, UHURU data have been examined; future plans include application of the techniques to the HEAO 2 returns.

Another program based on satellite data involves the use of the IUE to monitor the ultraviolet variability of Type I Seyfert galaxies.



Simultaneous observations were made in the II radii, infrared, optical, and x-ray spectra of III Zwicky 2 and Markarian 509, to date. In spite of the similarity of their optical properties and overall energy distributions from the infrared to the x-ray, the variability observations indicate that the physical conditions in these objects differ significantly.

On the theoretical side, work on possible modes of baryon and lepton nonconservation, and the implications for cosmology, continues. In other studies, a calculation of the behavior of adiabatic perturbations during the era of recombination showed, contrary to previous belief, that the Zel'dovich pancake model of galaxy formation could not be viable. Another effort saw the nature of perturbations larger than the horizon clarified.

The theoretical modeling of the effect of x-rays on the normal component of x-ray binary systems continues. Models for the structure of x-ray-illuminated stellar atmospheres are complete; and a model for optical and ultraviolet light curves of the illuminated atmospheres for use in the interpretation of observations of several sources has been developed.

A division member has developed a modification to the Kolmogorov-Smirnov likelihood test that allows incorporation of measurement errors and applied it to the determination of masses of x-ray sources in globular clusters. Another study of globular clusters involves age determination by means of a nonlinear statistical fitting procedure. This process simultaneously determines the several parameters necessary to describe a cluster color magnitude diagram; preliminary results for NGC 6752 suggest that an age less than ten billion years is consistent with observations.

In an attempt to explain the spectra of x-ray bursters, model atmospheres of neutron stars have been examined. In addition, the escape probability methods for predicting spectra from rapidly expanding or contracting media have been the subjects of investigation, as has the theory of alpha-omega dynamos, i.e., the implications of the theory for the creation of twisted magnetic fields.

Other areas of division research include the development and application of the methods of quantum mechanics to atomic and molecular processes with emphasis on energy-related problems and studies of the role of atomic and molecular processes in astrophysical and atmospheric phenomena.

## *Smithsonian Tropical Research Institute*

The Smithsonian Tropical Research Institute (STRI) is devoted to basic research on tropical plants and animals, including human beings. Students, staff, and visiting scientists at STRI study the ways in which tropical organisms find food, reproduce, and avoid being eaten, how they cooperate and compete, and how the communities of these plants and animals are organized. The stunning variety of ways in which tropical species cope with the various problems involved in staying alive and perpetuating their kind provides an essential perspective on the more familiar forms of life in the temperate zone. The tropics abound with some of the most spectacular instances of specialization, and relationships between different species are most complex there. A student can learn how evolution works from examples of adaptation at its most precise, as well as from the wealth of possible comparisons. Finally, we may learn something of how human populations might live in better balance with the environment by studying how the "balance of nature" is maintained in natural communities. At STRI, the process of testing and improving our understanding of tropical life has gained strength through over half a century of descriptive, experimental, and theoretical work on Barro Colorado Island and in other terrestrial and marine communities, both in Panama and in other parts of the tropics.

To facilitate tropical research, STRI administers the Barro Colorado Nature Monument, and maintains a large research library, marine laboratories on both coasts, a research vessel, a field station in the San Blas Islands off the Caribbean coast of Panama, and a support staff to assist both visitors and resident scientists with the tasks associated with living and doing research in a foreign country.

A new system of large tanks supplied with running seawater has been installed at the Pacific marine laboratory on Naos Island, permitting a much greater variety of experimental work with marine organisms. This system was formally opened July 10, and the President of the Republic of Panama and the Archbishop of Panama attended the opening ceremonies.

The Barro Colorado Nature Monument now includes not only the 1,500 hectares of Barro Colorado Island, but 3,900 hectares of mainland areas adjacent to the island. These include areas of mature

moist forest and some habitats not available on Barro Colorado Island, such as swamp-forest. Through joint agreement of the governments of the United States and Panama, this area enjoys strict protection. In 1980, Dr. Gilberto Ocaña (former Dean of the Faculty of Agronomy at the University of Panama) was appointed to STRI as the superintendent of this rich and varied area.

The National Directorate of Renewable Resources (RENARE) of the Republic of Panama has set aside 22,000 hectares of forest in the former Canal Zone as the Parque Nacional Soberania, or Sovereignty National Park. This park includes Summit Gardens and the Pipeline Road area, and borders the Barro Colorado Nature Monument to the north and west. The park represents a major commitment by the Panamanian government to the cause of conservation and will greatly enhance the value of the monument. Members of the Panamanian National Guard have been seconded on a temporary basis to assist STRI game wardens, and thereby gain experience in the protection of forest reserves. Dr. N. Smythe, head of STRI's Office of Conservation and Environmental Education, is facilitating the development of educational programs and a policy for scientific research in the new park.

The harvest to be reaped from tropical biology is immense, and the laborers are few. To help remedy this situation, educational opportunities in tropical biology are offered at STRI through predoctoral and postdoctoral short-term fellowships and assistantships. Funding is provided through the Scholarly Studies Program of the Smithsonian Institution, the Edward John Noble Foundation, and the Educational Outreach Program of STRI. Fellowships for students from outside the United States are also given through the Exxon Corporation. Georgina de Alba has been appointed Educational Coordinator to handle fellowship applications and arrange for their disposition.

During this year, thirty-five pre- and postdoctoral students participated in research of their own design or that of staff members. The results of their efforts, as well as studies made by visiting scientists, were presented in seventy-five seminars given at STRI.

A backbone of the scientific effort at STRI continues to be the individual research project in Panama. Harilaos Lessios is continuing to study the reproductive biology and ecology of sea urchins. He has shown that *Diadema antillarum* is a major element of erosion



in the massive coral *Colpophyllia natans*. Dr. Lessios has also shown that the reproductive isolation of geminate species of sea urchins from the two coasts of Panama arise in allopatry. This has not been found for other populations which were split by the formation of the Isthmus of Panama some three million years ago. During the year, Dr. Lessios gave papers at the American Society of Zoologists' meeting in Tampa, Florida, the meeting of the Association of Island Marine Laboratories of the Caribbean in Jamaica, and the Benthic Ecology Meetings in Williamsburg, Virginia.

In an attempt to learn why they migrate, sometimes in spectacular numbers, Neal Smith has been studying the host plant *Omphalea diandra* of the migratory day-flying moth *Urania*. It appears that after three successive defoliations by *Urania* larvae, *Omphalea* puts out leaves which are far more toxic. The moths may migrate in search of edible food plants. Dr. Smith was one of several STRI scientists to work with the Gorgas Memorial Laboratory and the Hydroelectric Resources Institute (IRHE) of Panama in a survey of plants and animals near the Changuinola River in the Bocas del Toro province of Panama. He is also collaborating with Dr. Robert Ridgely in expanding and revising the *Field Guide to the Birds of Panama*. Dr. Smith gave seminars at several universities in the northeastern United States, stressing the frequently complex and unusual interactions between plants and animals in the tropics, and participated in the Educators Conference at Washington, D.C.

Hindrik Wolda has continued his studies on seasonal rhythms and longer-term fluctuations of insect populations on Barro Colorado Island, and has completed a one-year study of seasonal rhythms in the catches of insects at light traps in a moderately non-seasonal forest in Bocas del Toro. Dr. Wolda also served as the STRI coordinator of surveys financed by IRHE in this area. He collaborated with a group from the University of Leeds in England studying insect populations in forested areas on Panama's Caribbean coast. Dr. Wolda participated in the International Congress for Systematic and Evolutionary Biology in Vancouver, and he has recently been appointed to the Royal Dutch Academy of Sciences.

Robert Silberglied completed a series of experiments on the role of multiple mating in the butterfly *Anartia*. Silberglied and co-workers have continued to study genetic incompatibility between *Anartia amathea* and *A. fatima* in laboratories on Barro Colorado

Island and at Harvard University. These populations are in what could be called the final stage of speciation, partial reproductive isolation. Dr. Silberglied presented two invited papers at the *Symposium on Neotropical Lepidoptera* and the American Lepidopterists' Society. He also taught classes in arthropod biology and in the evolutionary biology of Lepidoptera at Harvard University.

Predoctoral and postdoctoral fellows have pursued diverse studies with the financial aid of STRI. Francis Putz, a graduate student at Cornell University, is finishing a study on the ecology of lianas, focusing on the different modes by which they grow, and their ecological significance, and on the factors limiting their abundance and growth rate. He has also collaborated with Annette Aiello and others in the study of the causes of death in tropical trees, and how it is related to site, strength of wood, and other factors. Phyllis Coley, a graduate student at the University of Chicago, has just completed a study comparing the rates at which insects eat young leaves and mature ones, and the rate at which insects eat the leaves of pioneer saplings which can only establish and grow in large clearings, compared to the leaves of saplings of mature forest. She finds that young leaves, and leaves of pioneer saplings, are indeed eaten more readily. Further, the primary protection of a mature leaf lies not in its chemical defenses, but in its toughness and lack of protein.

Michael Ryan, another graduate student at Cornell University, is studying sexual selection in a frog, *Physalaemus*. Females apparently prefer to mate with larger males, and they can be shown experimentally to be attracted to males with deeper calls, which tend to be the larger males. He has collaborated in a study of how the nature of the frog's call is related to the presence of predatory bats: the most attractive call is also the one whose source the bats can locate most easily. Ryan's study is unusual in that it permits one to document quite precisely the role of female choice in a male's mating success. Raymond Highsmith, a postdoctoral fellow, is studying the effect that boring organisms have on the shapes and distributions of corals; he finds that corals of more productive habitats suffer more from the activities of boring organisms. He also finds that some corals have taken advantage of their susceptibility by acquiring the ability to regenerate from dispersed fragments. Steven Hoffman, a postdoctoral fellow, is studying the





STRI biologist and orchid specialist Dr. Robert Dressler discusses reproductive ecology of high-elevation plants with students at the Instituto Nacional in Xalapa, Veracruz, Mexico. (Photo by Kerry Ann Dressler.) Below. Within a split second of catching a frog is the fringe-lipped bat, *Trachops cirrhosus*. The relationship of the frog's call and the presence of predatory bats is the subject of an unusual research study supported by STRI. (Photo by Marlin D. Tuttle.)





effect of artificially increased food supply on the behavior of territory-holding male coral reef fish in the San Blas Islands: will increasing food supply cause them to grow faster or seek more matings or both? James Ackermann, a graduate student from Florida State University, and Arlee Montalvo continued a long-term study on the pollination ecology of *Spathiphyllum*, a plant that flowers year round and receives visits from different species of bees at different times of the year. They also continued the first long-term study of the abundance and phenology of bees that pollinate orchids.

Barbara Thorne, predoctoral fellow from Harvard University, made intensive studies of the arboreal termite, *Nasutitermes corniger*. She found that young colonies are very susceptible to predation. Possibly as a means of escape from the precarious status of a small colony, colonies often contained multiple egg-laying queens, a feature scarcely known for termites.

Studies have been pursued not only by fellows visiting for a year or more, but also by short-term fellows visiting for three months or less. Carol Todzia studied the distribution of different kinds of hemiepiphytes, plants, such as strangler figs, which start as epiphytes but later drop roots to the ground, on Barro Colorado Island. She showed that different species of hemiepiphytes tended to be found on different kinds of host plant; this appeared related to how the seeds of the different hemiepiphytes were dispersed. Gayle Vande Kerckhove has been studying the distribution of lichens on tree trunks, finding that light conditions, competitive relationships, and susceptibility to grazing animals such as land snails are all important.

Some short-term studies have long-lasting results. Patricia Parker came from the University of North Carolina for three months to study the social dynamics of a roost of black vultures, a group which returned to sleep together every night. She trained two Panamanian volunteers to trap, tag, age, and sex these vultures. One volunteer, Carlos Ayarza, has been studying the interactions between populations of black vultures based on Flamenco Island and on Ancon Hill, and the other, Guillermo Garcia de Paredes, has been studying the development of vultures by following marked vultures of known age. Both studies will lead to undergraduate theses at the University of Panama.

Other students from Panama and elsewhere have been learning techniques of research at STRI. Victoria Batista, from the Universidad de Bogotá, has been studying the community of plants and animals inhabiting the arching roots of the red mangrove at STRI's Caribbean marine station, mastering the taxonomy and natural history of a great variety of organisms in the process. René Mariscal has been studying the feeding habits and territorial behavior of the crab *Pachygrapsus transversus*, and assessing its role in the rocky intertidal community of the Pacific coast of Panama.

Some members of the STRI staff are participating in larger-scale research projects. Supported by a Scholarly Studies grant, David Roubik and twelve collaborators completed studies on the pollination ecology of various trees and shrubs in central Panama. Dr. Roubik also showed that nectar-robbing social bees affect the reproductive ecology of the forest shrub *Pavonia dasypetala* by aggressive competition with the hummingbird pollinator of the plant. Working with Juan Barria, Luis Porras, Karen Clary, and Anne Cully, he has started a pollen reference collection to study the pollination ecology of Panamanian plants. Dr. Roubik, with James Ackerman and others, has been monitoring the population dynamics of solitary euglossine bees and highly social stingless bees as preparation for a study of the ecological impact of Africanized honeybees, which are expected to invade in a few years. Dr. Roubik participated in the Smithsonian Interscience Conference at Front Royal, Virginia, and was invited speaker on the biology of the Africanized honeybee at the Gobernación del Valle in Cali, Colombia.

One way to learn how tropical communities are organized is to study how different kinds of plants and animals respond to seasonal and longer-term changes in their physical environment, and in the abundance of food or predators. The Environmental Sciences Program has accordingly instituted monitoring of selected features of climate and the physical environment, and of the responses of selected biological populations. During the past year, Dr. Donald Windsor has assumed responsibility for coordinating the various projects funded by the Smithsonian's Environmental Sciences Program. He is also continuing his comparative studies of cassidine beetles (tortoise beetles), seeking to understand the varied life histories, ranging from solitary to presocial, displayed within this group.

On Barro Colorado Island, the monitoring program keeps record of rainfall into the runoff from a 10-hectare catchment, the moisture content of the top 5 cm of soil, temperature, humidity, and wind; it also keeps records on the times of leaf production, leaf fall, fruiting, and flowering in several hundred trees, and the catches of insects at light traps. Under Dr. Windsor's direction, it is focusing on how fruit production in selected species of trees varies from year to year. Many species under study flower in response to the onset of the rainy season and will not flower or fruit if the preceding dry season is not sufficiently intense. The monitoring program is used to document more precisely the relation between climate and fruit production in these trees. Several scientists, financed from other sources, are studying the impact of variation in the fruit production of these trees on selected animal populations.

Egbert Leigh, Jr., Donald Windsor, and Stanley Rand have finished their editing of a collection of papers by many authors on various aspects of the ecology of Barro Colorado Island. Much of this work was financed by the Environmental Sciences Program. Many of the authors in this book are reporting on work they did on Barro Colorado Island as graduate students or postdoctoral fellows. The book is intended to report on the extent to which we understand the ecology of Barro Colorado Island.

At STRI's Caribbean marine laboratory, on Galeta Point, John Cubit runs a monitoring program on the reef flat. With Ricardo Thompson, John Kilar, and Mark Hay, Dr. Cubit followed monthly changes in biomass, population density, and growth rates of the predominant plant and animal species living on the reef in relation to weather and tidal fluctuations. They have also studied factors limiting the distribution on the reef flat of individual species of plants.

Work performed by STRI staff in other parts of the world provides often essential perspective on studies here in Panama. Dr. Ross Robertson stayed for four months at Palau in the western Pacific, studying the relationship of population density to social behavior and sexual dimorphism in size among surgeonfishes. While in the western Pacific, he documented the first case of coprophagy by reef fishes (a process common among mammalian folivores), and also showed that the spawning migrations of reef fishes from the cover of reefs to more open areas were strongly influenced by predation on the fish.



Michael Robinson and Barbara Robinson returned from Wau, Papua New Guinea, where they led a team of American and New Guinean researchers in diverse studies of ecology and behavior of spiders and insects. With support from a Scholarly Studies grant, Yael Lubin and H. W. Levi joined the Robinsons for studies on arachnid biology. Dr. Robinson returned to Panama to take the responsibilities of acting director of STRI. The Robinsons presented papers at the International Congress of Arachnology in Vienna, and Dr. Robinson also gave a seminar on predatory behavior during a symposium at Glasgow, Scotland. This year saw completion and publication of the Robinson's five-year study on courtship and mating behavior of tropical araneid spiders, a study involving fifty species of orb-web spiders occurring throughout the tropical world.

Alan Smith completed the fourth year of a study on convergent evolution of tropical plants growing about the tree line, such as the giant *Senecio* of Mount Kenya, *Puya* and *Espeletia* of the Andes, *Echium* of the Canary Islands, and *Argyroxiphium* growing on Hawaiian volcanoes. Dr. Smith is pursuing comparative studies on the physiology, ecology, and reproductive biology of these genera to account for some of their striking similarities. He recently demonstrated the considerable "cost of reproduction" to *Senecio keniodendron*, which experiences significant mortality following reproduction. Dr. Smith is currently exploring the costs and benefits of the deciduous and evergreen characteristics of different species of *Calathea* in Panama.

With aid from a Scholarly Studies grant, G. Gene Montgomery collaborated with the Instituto Nacional da Pesquisas de Amazonia in Manaus, Brazil, on the biology and conservation of the manatee, a large aquatic mammalian herbivore that inhabits the shallow waters of tropical estuaries and rivers. Dr. Montgomery also continued studies on the giant anteaters of the Amazon Basin. While engaged in studies of the distribution and abundance of manatees in the Panama Canal area, Dr. Montgomery began editing a forthcoming volume on edentate biology, to follow a large collection of papers that he edited, recently published by the Smithsonian Institution Press: *The Ecology of Arboreal Folivores*.

Egbert Leigh continued a joint study with R. T. Paine, of the University of Washington, on the causes of zonation among intertidal organisms on the rocky shores of Tatoosh, just off the northwest tip of the Olympic Peninsula in Washington. This community

is far more susceptible to the effects of manipulating the abundance of a single species, such as starfish, sea urchins, or seagulls, than is the forest community of Barro Colorado. When not occupied with editing the book on Barro Colorado, Dr. Leigh also worked on various mathematical theories relating to ecology and evolution, such as the average lifetime of a population in a varying environment.

During travel abroad this year, STRI staff shared their scientific experience by attending thirty-five scientific meetings and presenting more than thirty-eight seminars as invited lecturers. Peter Glynn spent much of the year on sabbatical at Stanford University, and while working with the population biology group of that institution gave several seminars on coral reef ecology. In collaboration with E. Druffel and R. Dunbar, Scripps Institute of Oceanography, Dr. Glynn was able to show that the "Little Ice Age" of approximately three hundred years ago adversely affected coral reefs on the Pacific coast of Central America because of a lowering of seawater temperature brought about by northern hemispheric cooling. Jerry Wellington and Peter Glynn have completed a book on the corals and coral reefs of the Galápagos Islands.

Olga Linares also profited from an invited fellowship at Stanford University, at the Center for Advanced Studies in the Behavioral Sciences. Continuing preparation of a book on the Diola peoples of southern Senegal, Dr. Linares lectured at the Anthropology Department of UCLA and at Stanford, while taking advantage of the unique opportunity for discussion of African social anthropology with a distinguished group of Center fellows.

Robert Dressler was resident lecturer on the reproductive ecology of seed plants at the Instituto Nacional para la Investigación de Recursos Bióticos in Xalapa, Mexico, and also gave seminars on orchid biology at other Mexican institutions. Dr. Dressler spoke at the Second International Congress on Systematic and Evolutionary Biology in Vancouver, then traveled to Cambridge, Massachusetts, to consult with the Harvard University Press on the coming publication of a book prepared during the past two years: *The Orchids: Natural History and Classification*.

William Eberhard and Mary Jane West-Eberhard were workshop lecturers on sociobiology during part of the year at the Indian Institute of Science and Tata Institute in Mahabaleshwar. Bill pre-

sented an invited paper at a congress on the evolutionary origin of eukaryotic organelles, sponsored by the New York Academy of Sciences. Dr. Eberhard teaches evolutionary biology at the Universidad de Costa Rica in San José and continues research on the behavior and ecology of orb-weaving spiders. Mary Jane is beginning long-term studies of Costa Rican social wasps, including behavioral studies of an unusual species in which the males use glandular secretions to mark mating trails which they patrol. The trails appear to be maintained over successive years by males from different colonies. Dr. West-Eberhard was visiting lecturer at the University of Texas, but declined invitations to lecture at universities in Berlin and Japan.

Martin Moynihan traveled to the People's Republic of China with the Smithsonian Institution delegation, exploring future possibilities of collaboration between STRI scientists and the scientists of that nation. While in India, as delegate to the Indo-United States Commission on Science and Technology meeting in New Delhi, Dr. Moynihan continued his studies on the coraciiforme birds of southern India. The fourth book published by Dr. Moynihan, entitled *Geographic Variations in Social Behavior and in Adaptations to Competition among Andean Birds*, appeared through the ornithological publications of the Museum of Comparative Zoology, Harvard University. In addition, with Arcadio Rodinache, Dr. Moynihan completed a book on comparative studies of cephalopod behavior.

Stan Rand and Gordon Burghardt co-edited a volume now in press on *Iguanas of the World: Behavior, Ecology and Conservation*. Dr. Rand also attended a conference on crocodilian biology in Milwaukee, Wisconsin, where he presented a paper with K. Troyer on parental care. At a meeting of the Man and the Biosphere Directorate for Tropical Forests, at the State Department in Washington, D.C., he reported on ecosystem research on Barro Colorado Island. Dr. Rand collaborated on the IRHE-sponsored inventory of amphibians in Bocas del Toro Province, Panama.





Recent gifts to the Museum of African Art are these *déblé* (so-called rhythm pounders), representing ancestors or deities. The male figure, with his titular crest, is uncommon. The existence of such a pair of fertility figures—these are from Senufo, of the Ivory Coast—is extremely rare.

## HISTORY AND ART

CHARLES BLITZER,  
ASSISTANT SECRETARY FOR HISTORY AND ART

### *Archives of American Art*

In fiscal year 1980, the Archives of American Art celebrated its twenty-fifth year of service to scholarship in American art history. The year 1980 also marked the tenth anniversary of the Archives' Smithsonian affiliation. The events and achievements of the year are evidence of the continuing growth implied by these chronological milestones.

Acquisitions in 1980 followed a pattern set many years ago: a fairly equal representation of the papers of artists and the papers of individuals active in other aspects of the art world. A strong presence of museum and other institutional records is also a regular feature. One of the larger collections received, the Gertrude Vanderbilt Whitney Papers, cuts across all lines. As artist, collector, patron, and museum founder, Mrs. Whitney was a major force in American art during the first half of the twentieth century; her correspondence, diaries, unpublished manuscripts, and photographs reveal these activities in voluminous detail. They are a valuable source for social history as well, the photographs alone providing a graphic record of New York society in its most opulent phase.

The most notable nineteenth-century acquisition is the papers of the marine and landscape painter William Trost Richards (1833–1905), whose correspondence with his own family and with such major figures as Samuel Putnam Avery and Thomas Eakins offers important documentation on Richards's career. An unusual element in these papers consists of twenty-eight volumes of manuscript magazines written by and for members of the Richards family and illustrated profusely by the artist.

The late nineteenth and early twentieth centuries are reflected in the H. Siddons Mowbray Papers, which include diaries, autobiographical writings, photographs, and letters from J. Carroll Beckwith, Edwin Blashfield, Charles McKim, Augustus Saint Gaudens, and Booker T. Washington. Also represented is another turn-of-the-century painter, Otto Bacher, a close friend of William Merritt Chase, John Singer Sargent, and Robert Blum. Among the Otto Bacher papers is a series of photographs that show these and other artists at what appear to be bacchanalian revelries, while a substantial group of letters from Blum, many of them charmingly illustrated, provide useful information on Blum's life and work.

Twentieth-century artists whose papers were received this year include Thomas Hart Benton, Hugh Breckenridge, James Brooks, Raphael Soyer, and Denys Wortman. There are also additions to the records of two other painters and graphic artists, Rockwell Kent and Louis Lozowick. In the case of the former, there are several hundred letters exchanged between Kent and his friend and admirer Dan Burne Jones dealing chiefly with Kent's work as illustrator and printmaker. The supplement to Lozowick's papers throws new light on artists' organizations of the 1930s, particularly on that well-known but sparsely documented group, the John Reed Club of New York.

In its pursuit of documentation on the arts in America, the Archives finds some of its best material in the papers of dealers, critics, collectors, and museums. Acquisitions made in 1980 were especially rich in such records. A diary kept by the Boston patron and collector Desmond Fitzgerald from the 1870s to the 1920s describes his growing involvement in the building of a major art collection as well as his active role in the Boston art world. Another substantial Boston acquisition is a large group of business records and correspondence of the Vose Galleries, probably the oldest art dealership in the country. The archives of the Museum of Fine Arts in Houston are now available on microfilm and a long-term project to film the records of the Museum of Fine Arts, Boston, was completed.

The papers of Leonard Clayton, a New York dealer for nearly fifty years, provide excellent material on Childe Hassam, Augustus Vincent Tack, and others. This collection includes two unrelated but informative sets of papers—records of the Marie Sterner Gallery in



the early 1920s; and reminiscences of the sculptor James E. Kelly, which offer vivid glimpses of the late nineteenth-century artists Winslow Homer, Albert Pinkham Ryder, William Harnett, and Napoleon Sarony.

Two of the most significant collections of the year are the papers of the scholars and curators A. Hyatt Mayor and Alfred Barr. Mayor, a prominent authority on prints and curator of prints at the Metropolitan Museum, is represented by manuscripts of articles and speeches and by correspondence with artists, art historians, dealers, and collectors. Alfred Barr's records fully reflect his leadership at the Museum of Modern Art over nearly forty years and his influential role as a vigorous partisan of contemporary art.

The papers of the late Bernard Reis, accountant, collector, and financial adviser to artists, contain an extremely lengthy correspondence with Peggy Guggenheim and useful if less numerous letters from Philip Guston, Jacques Lipchitz, Edward Albee, Sir Herbert Read, Marc Chagall, and Larry Rivers. A portion of the material touches on the celebrated Mark Rothko estate case, in which Reis played a major role.

Photographs of artists, particularly in a studio setting, are always of interest and often useful as a form of documentation. An unusually fine group of photographs of forty-two American artists in the early 1950s includes revealing portraits of such well-known figures as Milton Avery, Isabel Bishop, Edwin Dickinson, Edward Hopper, Jack Levine, Raphael Soyer, and William Zorach.

The Archives made a special effort this year to gather the records of the womens' art movement of the past two decades. Valuable information on this still-growing development appears in the files of three cooperative feminist galleries and three womens' art organizations.

The Archives Oral History Program continued its campaign to create an alternative form of documentation of twentieth-century American art. A two-year, \$30,000 West Coast project supported by foundation grants began a systematic attempt to cover both northern and southern California in fiscal year 1980. The Midwest regional office extended its preliminary exploration of videotaped interviews with a highly productive session with the photographer Barbara Morgan. The Archives centers in Boston and New York captured the reminiscences and observations of several figures of

prominence in the art world, most notably Allan Rohan Crite, John Davis Hatch, Nathan Halper, and Mrs. Walter Gropius.

Use of the Archives is measured by the number of research visits to its study centers; 2,710 visits, chiefly by graduate students, curators, and faculty members, represent a 10 percent increase over the previous year. Books, articles, lectures, exhibition catalogues, and dissertations based on Archives resources are the concrete results of research. An unusually high number of such publications appeared in fiscal year 1980, including a volume of the Metropolitan Museum collection catalogue, a French scholar's survey of American art, a biography of Rockwell Kent, an interpretation of American landscape painting, and exhibition catalogues on Luminism, Treasury Department murals of the 1930s, Farm Security Administration photographs in Ohio, the New York World's Fair of 1939-40, and the students of Howard Pyle. Among exhibition catalogues of the work of individual artists, those on Oscar Bluemner, Marsden Hartley, Edward Hopper, Thomas Moran, John Singer Sargent, and Marguerite Wildenhain were particularly noteworthy.

The Archives' own publication program rests primarily on its quarterly *Archives of American Art Journal*, whose pages regularly report on Archives' recent acquisitions and regional activities, and on the results of research by historians of American art. Two additional undertakings in 1980 were a catalogue of the documents displayed with a John Singer Sargent exhibition in Detroit, and guidelines for the handling of museum records. The crowning achievement of the Archives' publication program, however, was the appearance of the long-awaited *Arts in America: A Bibliography*, a four-volume, comprehensive guide to the literature on American art, a work described by one reviewer as "magisterial."

In January the Archives organized a three-day national conference on the administration of art museum records. Attended by museum and other archivists, librarians, and registrars, the conference addressed itself to questions of evaluation, preservation, and access, and drew up a detailed set of guidelines that has elicited an extraordinary response from museums here and abroad.

A scholarly contribution of another kind was the Archives' cosponsorship of three well-attended and well-received symposia: on Washington Allston, on Boston and the Avant Garde, and on

Michigan's cultural heritage. The Archives lent artists' letters and photographs to serve as documentary sections in several museum exhibitions, most notably the major John Singer Sargent show held at the Detroit Institute of Arts from October to December. Archives staff members delivered eighteen lectures during the year, published four articles and a catalogue essay, and gave papers at the American Historical Association annual meeting and at the Ninth International Sculpture Conference held in Washington, D.C.

These examples of educational service and contributions to scholarship represent a growing phase of the Archives' program. They are an appropriate expression of the maturity gained during twenty-five years of existence.

### *Cooper-Hewitt Museum*

An active program at the Cooper-Hewitt Museum continued in fiscal year 1980 to attract the interest and acclaim of the public, professionals, and critics alike. During the course of the year, the museum mounted thirteen new exhibitions, published five new catalogues to accompany exhibitions and five new books, and produced numerous varied and well-attended education programs.

#### EXHIBITIONS

The major fall exhibition, *Smithsonian*, filled the entire museum with eight hundred objects borrowed from all branches of the Institution, ranging in size from coins to cars.

A very popular show, *The Oceanliner: Speed, Style, Symbol*, opened on the second-floor galleries in January. In exploring the three themes, the museum assembled plans, cutaways, furnishings, paper memorabilia, and the ubiquitous souvenir. For the audience, it provided a nostalgic view of an era that had passed. According to *New York Times* critic Ada Louise Huxtable, "the show was a thoughtful analysis of the design aspect of the oceanliner."

*A Century of Ceramics in the United States, 1878-1978* came to the Cooper-Hewitt as a traveling show organized by the Everson Museum of Art in Syracuse. The 250 objects offered a comprehensive view of American ceramics.



Collections exhibitions have been an important focus in 1980. Shows on *Glass* and *Furniture* provided excellent opportunities to display these important collections, while *Tiles*, with examples dating back to the sixteenth century, offered an unusual visual experience.

*Spectacular Spaces*, exhibited as part of a larger show in Cologne, Germany, was a selection of Cooper-Hewitt architectural drawings from the sixteenth to the twentieth centuries. Shown in the Design Gallery, it created that perfect balance between art and architecture.

*Close Observation: Selected Oil Sketches by Frederic E. Church* opened in April on its final stop of an extensive national tour organized by the Smithsonian Institution Traveling Exhibition Service from the Cooper-Hewitt collection. Seven of Church's finished oil paintings which related to sketches shown—and a selection of artifacts from Olana, Church's home on the Hudson—were borrowed for the New York showing.

*Wallpaper* became the focus for a comprehensive study installed throughout the second-floor galleries during the summer. Entirely taken from the museum's extensive collection, the fine selection provided an ideal subject for this major exhibition documenting wallcovering samples from the United States, China, and Europe from the late 1600s to the present.

*Hair*, an exhibition conceived and organized by the museum, examined hairstyles and hair decoration throughout history. A delightful summer show, *Hair* contained some 350 objects and explored numerous categories dealing with ornaments for the hair; jewelry made of hair; wigs; and objects for the care of hair.

Two loan shows scheduled for the fall were *Beach, Boardwalk, Boulevard*, a study of the past, present, and future of Atlantic City as projected in the architecture, design, and artifacts of the famed seaside resort city, and *The Colman Collection of Silver Mustard Pots* from England.

Arriving in September, *Electroworks* traced the development of copy machine art created by artists and designers. This exhibition consisted of over 250 works including prints, limited edition books, graphics, textiles, animation, and three-dimensional objects. A particular highlight was the Xerox 6500 color copier staffed by trained operators and artists who gave demonstrations.

The Smithsonian Institution Traveling Exhibition Service con-



Exhibitions at the Cooper-Hewitt Museum in New York City continue to attract the attention of the public as well as museum professionals and reviewers. The unusual summer show on *Hair* comprised sculpture, paintings, prints, drawings, photographs, and decorative arts highlighting hairstyles through the ages.

*Below.* The elaborate hair wreath and the engravings displayed here were among the 350 objects shown, including hair ornaments, jewelry, wigs and other objects made of hair, as well as objects for the care of hair.





tinued to circulate Cooper-Hewitt exhibitions. *Urban Open Spaces* and an expanded version of *The Shopping Bag* exhibition joined *Crosscurrents: French and Italian Neoclassical Drawings and Prints*; *Close Observation: Selected Oil Sketches by Frederic E. Church*; and the *Subways* exhibition.

#### PUBLICATIONS

Continuing the twelve-part series, *The Smithsonian Illustrated Library of Antiques* prepared by the Cooper-Hewitt Museum, three more books were published in cooperation with the Book-of-the-Month Club: *Prints, Furniture 2*, and *Clocks*. In connection with the collections exhibitions, the museum published two new catalogues, *Furniture* and *Tiles*. Catalogues also accompanied *The Oceanliner*; *Spectacular Spaces*; *Close Observations: Selected Oil Sketches by Frederic E. Church*; and *Hair*. *Urban Open Spaces*, the special tabloid catalogue for the 1979 exhibition in the "Immovable Objects" exhibition series was published as a book by Rizzoli. With the assistance of the Barra Foundation, *Wallpaper in America*, a book based on the Cooper-Hewitt collection of wallpapers, was also published.

#### PROGRAMS AND MEMBERSHIP

During the four semesters beginning in the fall of 1979, over 4,000 students participated in the education programs of the Cooper-Hewitt. In addition, more than 2,000 attended tours and special events in 1980.

Concurrent with several of the exhibitions, the department organized special courses and events relating to design, architecture, and the decorative arts. One example during *The Oceanliner* exhibition was the delightful lecture prepared by John Maxtone-Graham, author of the *Only Way to Cross*. In addition to the lectures, there were numerous tours including ones of Charleston, South Carolina; Williamstown, Massachusetts; and the Catskill Mountains in New York. A two-part series of performing arts events were held in the Mansion Garden during the summer. The concerts included an early American opera, a jazz concert by David Amram, and a classical chamber ensemble, in addition to performances by two modern dance companies.

In conjunction with the Bank Street College of Education, the



museum developed a children's program specially designed by a visiting graduate student. After three months of operation, the program had hosted more than 1,250 students from sixty groups with enthusiastic response from all involved. The museum also benefited from the invaluable service of one hundred volunteers and twenty-five interns who gave much of their time during the year. The Sidney and Celia Siegel Fellowship Program provided stipends for three students.

Membership support in the form both of renewals and new applicants has continued to increase. In September the total topped 6,700 showing a 20 percent increase in new members since last year.

Christie's president David Bathurst presided as auctioneer for the Seventh Annual Benefit Auction. It was the first time Christie's handled the event and, as in past years, it continues to be a successful source of revenue.

#### COLLECTIONS MANAGEMENT

Some 92 donors contributed 3,295 works of art to the museum, and the collections were further enhanced by nine purchases made with restricted acquisitions funds. The museum borrowed 3,756 items from 180 museums and private collections for special exhibitions, and lent 324 objects for exhibitions to 26 museums and other institutions.

An inventory of the collections begun in 1979 with an appropriation from Congress continues. Over 70,000 objects have been inventoried and most of these have been recorded on computer.

Several physical changes occurred in the mansion. The Design Gallery was redesigned and enlarged. The textile collection is in the process of being moved from storage following completion of the new Textile Department quarters. The Paper Conservation Laboratory was also completed, and immediately put to use.

#### AWARDS

The museum received several awards. At its annual awards ceremony, the Municipal Art Society presented the Cooper-Hewitt Museum with a Certificate of Merit for the conception of "Museum Mile." Official certification as a National Historic Landmark was granted to the Andrew Carnegie Mansion by the United States

Department of the Interior at the members' annual garden party. Last summer's *Urban Open Spaces* exhibition was cited by *Urban Design Newsletter* in its fourth annual Urban Design Awards for significant contributions in the field. In addition, the *Urban Open Spaces* and *Glass* catalogues received awards from the printing industry.

### *Freer Gallery of Art*

Expansion dominated most of the programs of the Freer Gallery of Art in fiscal year 1980. Expanded programs came in response to the growing numbers of visitors as well as the increasing flow of requests for information about the collections. Both developments appear to reflect renewed interest in the Asian scene, and there is every indication that the numbers of visitors and of requests for information about the culture of the Near and Far East will continue to expand during the 1980s. The gallery's multifaceted programs have been instituted to help meet those demands.

One aspect of the expansion program involves the proposed new center for Eastern art in the Smithsonian's South Quadrangle. The gallery's activities during the past year have been, and in coming years will be, directed toward this expansion. With space for traveling exhibitions in the proposed center, the opportunities for the Smithsonian to host national and international exhibitions will mark a totally new era in public understanding and awareness of Oriental art. By preparing well in advance for those changes, the Freer should be able to meet the challenges without difficulty.

For the growing number of visitors, the Freer Gallery initiated an illustrated pamphlet introducing the gallery and its history. The public reaction to this free statement has been extremely favorable. The initial printing of 20,000 copies was exhausted within six weeks, and a second printing is being distributed.

Single-page illustrated leaflets that introduce the art objects displayed permanently in the galleries have also been popular. A variant of this free leaflet is the more detailed statement available to visitors of the special exhibitions. Staff members are preparing additional leaflets in an expanded program for the coming year.

Special exhibitions that highlight specific aspects of the collections are being presented more frequently. There were two major exhibitions during fiscal year 1980. The first, entitled *A Decade of Discovery*, opened on November 8, 1979. The 114 objects in the exhibition were selected from among the pieces added to the collections during the period 1970 to 1980. Spanning a period from the third and second millennia B.C. to the nineteenth century A.D., the items included religious images, ritual objects, secular paintings, personal ornaments, and household furnishings, representing cultures as far apart geographically as the shores of the Mediterranean, the subcontinent of India, and the islands of Japan. A fully illustrated catalogue was prepared for this exhibition.

The second major offering during the past year was a display of Chinese calligraphy that opened on May 9, 1980. The exhibition provided the first opportunity for the general public to view twelve masterpieces of Chinese calligraphy that were purchased by the gallery through the Smithsonian's Collections Acquisition Program.

Among the smaller exhibitions organized by members of the curatorial staff was the *Art of the Court of Shah Tahmasp*. During his reign in the sixteenth century, Shah Tahmasp assembled a group of artists who produced some of the finest illustrated manuscripts in the history of Persian painting. The Freer's collection of manuscripts from those imperial workshops is especially noteworthy.

To mark 1980 as the Year of the Monkey, the gallery organized a small display of Chinese and Japanese paintings depicting monkeys. Mounted in conjunction with that exhibition was one of equal size that featured a group of Japanese fan paintings. Some examples of Japanese ceramics and lacquer in which the fan format played an important role were also included.

The Freer's American collection continues to attract visitors from all over the world. To demonstrate the rich holdings assembled by Charles Lang Freer, the gallery presented a special exhibition of paintings and drawings by Thomas Wilmer Dewing (1851–1938). An unusual aspect of the exhibition was the handsome framing for the oil paintings, many of these frames having been specifically designed for the paintings by the noted architect Stanford White.



神在妙峰山頂上降下河漢  
神在妙峰山頂上降下河漢  
神在妙峰山頂上降下河漢  
神在妙峰山頂上降下河漢

This masterpiece of Chinese calligraphy (Ming dyn.) is in the Freer collection.

Drawing upon the gallery's large holdings of Chinese jade carving, a representative group of pieces dating from the late Neolithic period to the Han dynasty (third millennium B.C. to third century A.D.) was shown at the end of the year. That was the first time the gallery had ever mounted a special display of its Chinese jade.

The Freer Gallery has always been active in cooperating with counterpart institutions and colleagues abroad. This effort expanded in the past year, particularly with the People's Republic of China. Three groups of distinguished scholars and officials from China visited the gallery for working sessions with the gallery's Technical Laboratory and curatorial staff. These included Mr. Ch'i Chuang, vice-minister of culture; Mr. Hsia Nai, head of the National Academy of Sciences; and Mr. Ma Ch'eng-yüan, curator of the Shanghai Museum. Ambassador Chai Zemin visited the gallery in January and again in May for the opening of the *Chinese Calligraphy* exhibition. Earlier in the year, Mrs. Joan Mondale, wife of the Smithsonian Regent and vice-president of the United States, prepared for her trip to China with a visit to the gallery. The Freer director, as a member of the Smithsonian delegation to China, lectured at the Shanghai Museum on "The Exhibition, Conservation and Storage of Chinese Art at the Freer Gallery of Art."

An unusually large number of additions were made to the collections during the year, reflecting the expanded role of donors of objects and financial support in the life of the gallery. Of the 197 objects, 77 were Chinese paintings presented to the Freer by the United States Department of the Treasury, Bureau of Customs. The James Smithson Society generously purchased a Turkish candlestick, dated ca. 1500, and presented it to the gallery. A growing number of private individuals contributed to the gallery. Of particular importance were three Korean ceramics presented in memory of Ambassador Samuel D. Berger. The twelfth-century celadon bowl and two eighteenth–nineteenth century porcelain jars complement the gallery's Korean ceramic collection. The Freer Library benefited particularly from donors, including the Japan Foundation, the Metropolitan Center for Far Eastern Art Studies, and the Ellen Bayard Weedon Foundation.

The first award from the Harold P. Stern Memorial Fund enabled the gallery to invite Profesor Eiichi Taguchi of the Tokyo University of Fine Arts to spend three months at the Freer doing

research on the Japanese Buddhist paintings in the collection. The second recipient of an award from the Stern Memorial Fund, Professor Koji Nakamura of Nara Women's College, will visit the gallery early in the coming fiscal year.

Dr. Milo C. Beach of Williams College was appointed a Smithsonian Regents Fellow to study the Freer's outstanding collection of Indian Mughal paintings.

The Freer Gallery sponsored the twenty-seventh annual series of "Illustrated Lectures on Oriental Art." One of the six lectures, by Professor Henry D. Smith II, of the University of California, was sponsored jointly with the Embassy of Japan. The Rutherford J. Gettens Memorial Lecture, "East Asian Paintings and the Scientist: A Materialistic Look at Works of Art," was delivered by Dr. John Winter of the Freer staff.

### *Hirshhorn Museum and Sculpture Garden*

As one of the major museums of contemporary art in the country, the Hirshhorn Museum and Sculpture Garden maintains an active exhibition schedule and acquisitions program. In support of these are related programs of lectures, films, concerts, and educational activities involving audiences of all ages. Technical and support units include offices of conservation, registration, photography, and a reference library.

Acquisitions are vital to any museum but especially to a contemporary art museum. During 1980 the museum acquired eighty-one works of art, including forty-one gifts from Joseph H. Hirshhorn. Two major works were acquired with nonappropriated trust funds made available by the Smithsonian Board of Regents and partially matched by funds raised by the Hirshhorn Museum and Sculpture Garden Board of Trustees. The first was a cast of Gaston Lachaise's *Standing Woman* (1932), and the second a painting by Joan Miró, *Woman before an Eclipse with Her Hair Disheveled by the Wind*. Other important purchases included works by Tony Smith, Joseph Cornell, Arthur Dove, and Honoré Daumier.

Major exhibitions that opened during the last year included



*Murals Without Walls: Arshile Gorky's Aviation Murals Rediscovered* (October 4–November 25, 1979), which was shown in conjunction with the museum's collection of twenty-nine works by the same artist. The murals, which were painted by Gorky in the late 1930s for the airport administration building at Newark, New Jersey, had been painted over and hence "lost." Subsequently, two of these murals were able to be removed from the walls and restored for exhibition. This display was organized by the American Federation of Arts.

The exhibition *Fernando Botero* (December 20, 1979–February 10, 1980) opened with the artist attending the preview. Including sixty-six paintings, drawings, and sculptures spanning thirty years of this Colombian artist's career, the show was Botero's first museum retrospective in the United States. The exhibition traveled to the Art Museum of South Texas at Corpus Christi.

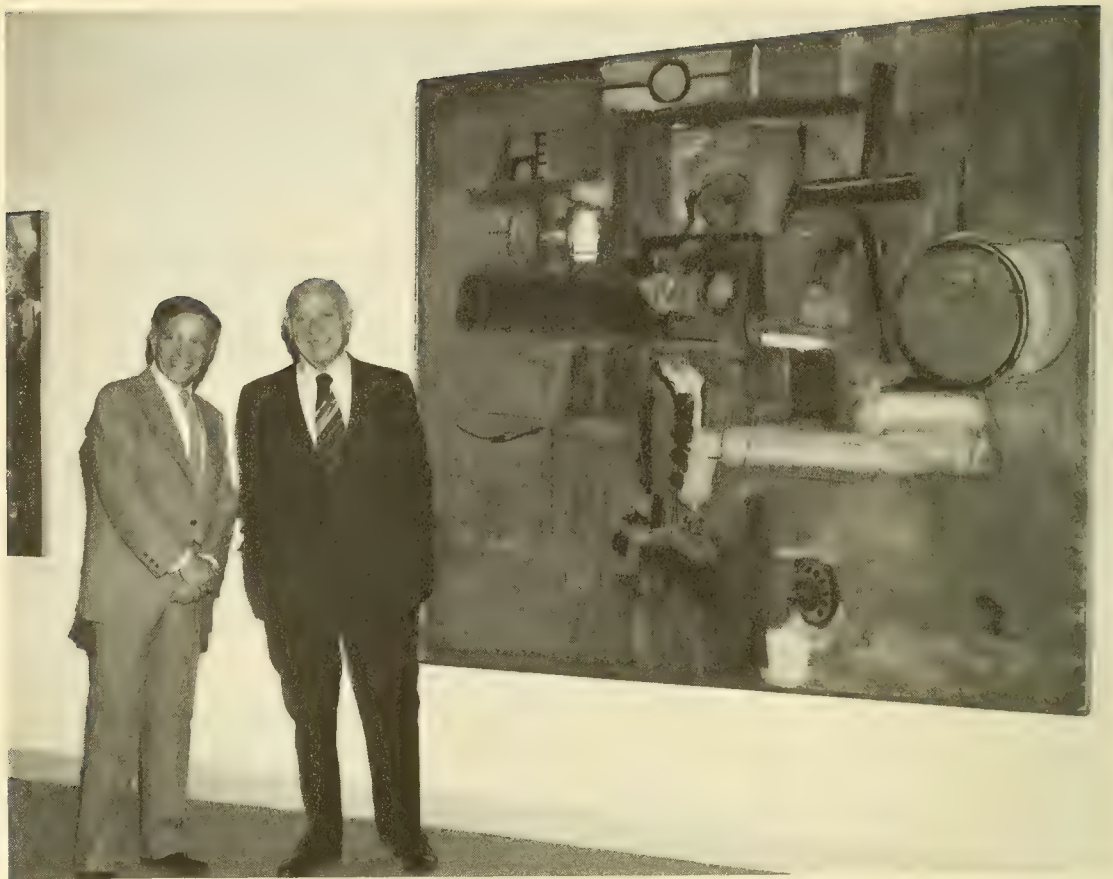
*Miró: Selected Paintings* (March 20–June 8, 1980), with forty-five works from American collections, was a major exhibition. Accompanied by a catalogue fully illustrated in color, it was also exhibited at the Albright-Knox Art Gallery in Buffalo, New York.

*The Fifties: Aspects of Painting in New York* (May 22–September 21, 1980) was exhibited on most of the third floor of the museum. This exhibition was accompanied by a tape tour by the curator who organized the show, including interviews with two of the artists in the exhibition, Larry Rivers and Helen Frankenthaler.

Finally, *Edwin Dickinson: Selected Landscapes* (September 18–December 14, 1980), an exhibition of fifty-eight paintings, opened here in the fall of 1980. This exhibition will be displayed at the J. B. Speed Museum, Louisville, Kentucky.

Smaller exhibitions, mostly based on the museum's holdings, were *Oscar Bluemner*; *Raphael Soyer*; the *Benin Collection*; *Hans Richter's Stalingrad: Victory in the East*; *The Cubist Heritage*; *The Intimate Scale: A Selection*; *Mayan Installation*; *Alexandra Exter: Marionettes and Theatrical Design*; *Brancusi as Photographer* (organized by the Akron Art Institute); *Nakian*; and *New York: The Artist's View*.

Two small exhibitions that merit special attention were *Seven Belgian Artists: Selections from the Hirshhorn Museum Collection*



Hirshhorn Museum Director Abram Lerner stands near Larry Rivers's *Second Avenue*, lent by Senator Jacob Javits (right) for the Hirshhorn show *The Fifties*. Below. One of the many works on paper acquired by NCA this year was Yasuo Kuniyoshi's lithograph *Café*.





and *Art Deco Posters from the Library of Congress*. The Queen of the Belgians, accompanied by the museum director and others, toured *Seven Belgian Artists*, which was exhibited as part of the United States' celebration of Belgium's 150th anniversary. *Art Deco Posters from the Library of Congress* was the first exhibition at the Hirshhorn Museum to be drawn exclusively from the collection of another government agency. The exhibition was warmly received and plans call for similar projects in the future.

The museum provided visitors with a variety of educational materials, including wall labels and brochures that ranged from a single page to more ambitious illustrated "mini-catalogues," all distributed free to the public. All major exhibitions and selected small exhibitions are accompanied by well-documented and illustrated catalogues that serve the general public as well as students and scholars.

Specially trained docents offered tours of both the permanent collection and special exhibitions. During the Botero and Miró installations docents conducted tours in Spanish.

The museum makes extensive loans from its collection to other institutions around the world: in 1980, eighty-four objects were lent to thirty-two institutions. These included twenty-seven paintings for an exhibition called *Treasures from the Hirshhorn Museum*, presented by the Terra Museum of American Art, Evanston, Illinois. A major loan went to the 1980 Venice Biennale. Besides individual loans, exhibitions from the permanent collection are circulated by the Smithsonian Institution Traveling Exhibition Service. In 1980 a new exhibition, *Collages from the Hirshhorn Museum*, was organized to be sent on tour by this service.

The Hirshhorn Museum and Sculpture Garden continued the annual inventory of its collection. Works on paper were fully inventoried in this final cycle of the three-year program. A conservation survey to assess the condition of approximately 650 unframed prints and drawings in the collection was completed so that untreated works from the collection could receive systematic conservation care.

Augmenting the museum's exhibition program was a series of lectures on various aspects of contemporary art and art history. The speakers were Ruth Bowman, Suzi Gablick, Cynthia Jaffee McCabe, Miranda McClintic, Charles Millard, David Nash, Phyllis



Rosenzweig, and Judith Zilczer. The Resident Associate Program sponsored a well-attended lecture by Rosamond Bernier on Joan Miró.

The museum continued its three-part film series: "Lunchtime Films about Artists," "Evening Films by Artist Filmmakers," and "Saturday Films for Young People." Other events held in the auditorium were concerts by the 20th-Century Consort, the Cantilena Chamber Players, and American Women Composers.

"Hirshhorn Holiday," a special Saturday program presented each year early in December, again met with enthusiasm from area children and their parents. This special day, sponsored in part by the Women's Committee of the Smithsonian Associates, included performances and music.

On February 7–9, 1980, the Hirshhorn Museum and Sculpture Garden and the National Museum of History and Technology provided forums for the colloquium, *The Muses Flee Hitler: Cultural Transfer and Adaptation in the United States, 1930–1945*, which was the final event of the Smithsonian's Einstein Centennial celebration. Twenty-six speakers participated in this first multidisciplinary meeting devoted to recent scholarship on the subject of the Holocaust's legacy to American culture.

### *Joseph Henry Papers*

In fiscal year 1980, the manuscript of the fourth volume of *The Papers of Joseph Henry* was completed and turned over to the Smithsonian Institution Press. This volume covers three years of Henry's Princeton career, 1838–1840, a period when Henry returned with new intensity to his scientific work, amply documented in his laboratory notes and in related correspondence. Henry's letters also disclose a growing interest—reinforced by his recent experience in Europe—in attempts to organize the American scientific community.

The Henry staff also completed the manuscript for another publication, a special volume entitled *A Scientist in American Life: Essays and Lectures of Joseph Henry*. To be published by the Smithsonian Institution Press, the volume is intended as a popular

reader and college text on Henry's scientific ideology. The public discourses presented in this volume span Henry's long career in science.

As a contribution to the Smithsonian celebration of the Einstein Centennial, Nathan Reingold co-chaired and -planned a symposium on the intellectual and artistic flight from Hitler to the United States entitled *The Muses Flee Hitler* held in February 1980. Nathan Reingold also addressed the Los Alamos Scientific Laboratory on "The Scientist as Troubled American." Marc Rothenberg spoke on the "Needs and Opportunities in the History of Astronomy," to a seminar on "Science and Its Social Context." Arthur Molella addressed graduate students and faculty of the Medical University of South Carolina on "Joseph Henry and the Founding of the American Scientific Community." Philip Shoemaker from the University of Wisconsin and Katherine Olesko of Cornell were Smithsonian Fellows with the Joseph Henry Papers.

### *Museum of African Art*

In its first full year as part of the Smithsonian Institution, the Museum of African Art concentrated its efforts upon consolidating its resources and defining its future exhibition, programming, and collecting goals.

While continuing to give emphasis to its special educational purpose, that of enhancing intercultural and interracial understanding in America by fostering greater public appreciation of the rich and ancient creative traditions of Africa, the museum began during its first Smithsonian year to give greater attention to research activities. This attention was given not only in preparation of exhibitions and public education programs, but in regard to the material in the museum's 8,500-object collection and with an eye toward future publication programs.

A major inventory of the collection was begun with 3,300 objects having been handled by the end of the year. Some 350 objects from thirty-six donors were added to the collection during the year, including gifts of a collection of contemporary Tanzanian sculpture (Makonde) and other objects from former United States Ambassadors.

sador to Tanzania and Mrs. W. Beverly Carter, Jr., a member of the Museum of African Art's Commission; twenty-eight objects of West African sculpture from Benjamin Weiss of New York; and selected works from Mr. and Mrs. Chaim Gross of New York, Mr. and Mrs. Ernst du Pont of Delaware, and others.

The museum presented four major exhibitions and three smaller ones during the year: *The Useful Arts of Kenya; Puppets from West Africa*, presented in conjunction with the International Puppetry Congress held in Washington, D.C., in June; *Selections from the Permanent Collection*, featuring the Samuel Rubin bequest; and *The Image of the Black in Western Art*. This last exhibition, organized by the Menil Foundation and the Rice University Institute of the Arts of Houston, Texas, will be circulated throughout the United States by the Smithsonian Institution Traveling Exhibition Service. The three secondary exhibitions were: *Harvest Ceremonies and Celebrations*, an exhibition correlated with the December/January Afro-American Kwanzaa holiday; *Five 19th Century Afro-American Artists*, presented in conjunction with Black History Month events in February; and *Appliqued Cloths of the Dahomey Kingdom*, a collection gathered in Africa in the 1930s by the late American cultural anthropologist and Africanist, Melville Herskovits.

Only a limited number of extension exhibitions could be handled by the museum this year: a sculpture exhibition entitled *The Language of African Art* sent to Franklin and Marshall College in Lancaster, Pennsylvania; *Panorama of African Art* for government employees and visitors to the Executive Office Building (Office of Management and Budget); and an exhibition of textiles, prepared for the Office of Minority Concerns on the occasion of the opening of the newly created Department of Education.

In addition, more than one hundred objects of African and Afro-American art were lent by the museum to nine other museums, universities, and government agencies such as the Department of State and the Office of the Vice-President.

The museum's Department of Academic Studies offered seven courses at universities and other educational institutions in the Washington area: Georgetown University ("Images of Authority in African Art"); American University ("African Textiles and Decorative Arts"); the United States Department of Agriculture



Graduate School ("Masks in African Art" and "Collecting African Art"); and the Smithsonian Resident Associate Program (survey course). In addition, the department offered special intensive presentations to other university groups, including, for the third successive year, a class in "Aesthetics and Education" for the University of Virginia. Consultations with the Montgomery and Fairfax County school boards over the past year have resulted in the production of preliminary curriculum material for teacher education courses to be offered during 1981.

Eighteen university students served internships during the past year, bringing to eighty-four the total number who have received college credit training in the museum's various departments.

The museum continues to cosponsor with the Johns Hopkins University School of Advanced International Studies a monthly series of lectures entitled "The Africa Roundtable." Presentations by international and local scholars focus on all aspects of African political, economic, and social life. Noted scholars who have presented papers over the past year have included Emmanuel Obiechina of the University of Nigeria, Paul Stoller of West Chester State College, David and Marina Ottoway (fellows of the Woodrow Wilson International Center for Scholars), Remy Clignet and Judith Hanna of the University of Maryland, and Ntalaja Nzongola from Zaire, currently at Howard University.

Now in its nineteenth year is the series of monthly seminars on African art and culture, conducted by the director of the museum, for officers studying at the Department of State's Foreign Service Institute. The director also lectured at the Corcoran Gallery of Art, at the Fifth Triennial Symposium on African Art at the High Museum in Atlanta, at a conference on Nigerian-American Friendship in New York, at the University of Minnesota, for the Association of National School Boards, for the Federal Bar Association, and in the Cosmos Club lecture series, as well as for the Smithsonian Resident Associate Program and museum membership programs.

Other staff members who have lectured at universities, museums, and in various training programs are Edward Lifschitz (Coordinator of Academic Studies) at the Chrysler Museum in Norfolk, Virginia, at Old Dominion University, and at the International Puppetry Congress; Amina Dickerson (Program Director) at

Monroe Community College in Rochester, New York, Mount Vernon College, Howard University, and for the Associates of Arts Administration Education; Gretchen Jennings (Museum Training Officer) at George Washington University and to teachers of the Fairfax County public school system; Mary Lynn Perry at the 1980 Conference of the American Association of Museums; and Lydia Puccinelli (Curator of Collections) at the Corcoran Gallery.

Activities conducted during the past year by the museum's Public Programming Department (including elementary and secondary school and adult education programs) have been extensive and highly diverse. The year began with several events concluding a special program, "Africa in the Americas: An Exploration of the African Diaspora," funded by the National Endowment for the Humanities and the Rockefeller Foundation. Participants in lectures and panel discussions included such prominent African and Afro-American scholars as Dr. Wole Soyinka (University of Ife, Nigeria), Dr. Fela Sowande (Kent State University), Professors Robert F. Thompson, Sylvia Boone, and Rosalind Jefferies (all of Yale University), Dr. Barry Gaither (National Center for Afro-American Arts, Boston, Massachusetts), and Dr. Sylvia Williams (Brooklyn Museum). Music, drama, film, workshops, folktale and poetry readings, as well as dancing and drumming performances rounded out the program, which concluded with the museum's fourth annual Kwanzaa Festival.

In November and December, the museum participated, with the Anacostia Neighborhood Museum and the National Museum of History and Technology, in a three-weekend, tri-museum program for children and parents designed to give participants a broader perspective on the continuity of African cultures throughout the world.

During February, designated as National Ethnic Heritage Month, the museum sponsored concerts featuring talented child performers (ages 5 to 12), and the students of the Duke Ellington School for the Arts; a puppet show for children, highlighting the contributions of Afro-Americans to American history; lectures by Howard University Professor Russell Adams on "The Relevance of Frederick Douglass in Our Time," and Professor James Lewis of Morgan State College on "The Owo Archeology Project." The

museum also staged, for the second year, a two-day seminar, "Careers in Museums," for area high school seniors and college freshmen, on the occasion of International Museum Day.

Other special program events included a concert by the Eight Musicians from Mali, Zaire and Zambia; a concert by the Senegalese ballet company, Mudra Afrique; a summer outdoor concert series in the museum's newly expanded and renovated N'Debele Courtyard, which featured the American ethnomusicologist/musician Paul Berliner, a Brazilian samba band, and a Trinidad steel band; a lecture/demonstration by the Ghanaian master drummer, Yacub Addy; and a lecture/poetry reading by the eminent poet-scholar Sterling Brown.

The museum's African crafts program for school children included an average of two to three workshops each week, with occasional special workshops conducted by noted African artists such as Olabisi Olanyi from Oshogbo, Nigeria. In September, the Malawian sculptor and Professor of African Art, Dr. Berlings Kaunda, began a four-month Fulbright fellowship at the museum as Artist-in-Residence.

Teacher training activities were provided for the school systems of Montgomery County in Maryland and counties Fairfax and Arlington in Virginia as well as for the District of Columbia. Requests for such services far surpass the museum's current staff capability to fulfill them.

During the year more than 1,200 groups—school classes; church, civic, and fraternal organizations; university classes; visiting tourists—participated in special orientation sessions on African culture conducted by African members of the museum's staff, an activity which continues to be a mainstay of the museum's public education program.

### *National Collection of Fine Arts*

In building the collections of the National Collection of Fine Arts (NCFA) over the past ten years, emphasis has been placed on keeping the collection abreast of current activity in American art, filling in notable omissions, and recording in depth the work of some



characteristic artists. Towards these ends, 1,347 works were added to the collections during the year.

By far the fastest growing department of the museum has been the Department of Prints and Drawings; formed initially in the 1960s by Jacob Kainen, this department has been continuously and judiciously expanded by the present curator, Janet Flint. Aside from mounting five exhibitions, including the popular *Prints for the People* and the important *Drawings of Morris Louis*, the department acquired this year 1,175 works on paper. Among the major gifts were: the Frank McClure bequest of 440 works which, in addition to his own graphic work, included 181 prints by his contemporaries and 3 paintings; a gift by Adele Lozowick of 48 additional prints by Louis Lozowick (1892–1973), which brings the museum's collection of works by this important, innovative artist to 111; and 33 prints by Howard Norton Cook. Of very different character are the 99 watercolor paintings by Pueblo Indians executed during the first quarter of the century, presented by Mrs. Edgar L. Rossin, daughter of the Santa Fe painter William Penhallow Henderson whose sympathetic paintings of the Indians of Taos and Santa Fe were shown by NCEA in 1979. Two areas of particular interest to the Department of Prints and Drawings are monotypes and early twentieth-century color woodcuts, several of which were added during the year.

All departments have continued to add important works to the collection, but the Department of 20th Century Painting and Sculpture this year has made spectacular gains. Twenty-six major paintings, including works by De Kooning, Morris Louis, Clyfford Still, and Franz Kline—many of which had for some time been on display in the museum—were acquired by a combination of purchase and gift from the collection of Vincent Melzac. Sixteen paintings by Jacob Kainen—whose five decades as a painter were celebrated by an exhibition at the museum in December—were accessioned, chosen to cover the various periods of his career. The addition of thirteen paintings by the late Alma Thomas brought the museum's survey of her achievements to twenty-nine works. Among the important individual works acquired were an imposing recent work by Gene Davis, and Franz Kline's early landscape *Palmerton* (1941).

Among earlier works acquired were: twenty-eight additions to

the museum's distinguished collection of portrait miniatures, Emanuel Leutze's *The Courtship of Ann Boleyn* (1847), and Worthington Whittredge's *The Amphitheatre of Tusculum and View of the Alban Hills* (1860).

In the autumn of 1979, particular attention was given to art of the 1930s. On the fiftieth anniversary of the Wall Street crash, an exhibition of somber art produced under the WPA opened; called *After the Crash*, the exhibition has been supplemented by a new gallery devoted to other works from the Federal Art Projects. *Prints for the People* called attention to the vital movement in the graphic arts under the WPA. A major exhibition, *Sculpture and the Federal Triangle*, the product of several years' research, underscored the technical and stylistic procedures in the design of the last monumental federal building project (begun in 1928) to make use of the traditional close collaboration of sculptors, architects, and technicians. These exhibitions provided fascinating comparative background for the comprehensive exhibition—mounted in the summer of 1980—of maquettes for art commissioned for federal buildings between 1972 and 1979. *Across the Nation: Fine Art for Federal Buildings* presented a cross section of adventuresome recent art. The maquettes and designs for eighty-eight commissions were transferred to NCEA for the permanent collection by the General Services Administration, and were scheduled to tour the country after the exhibition in Washington.

Extensive public programs of films, music, lectures, and walking tours accompanied the exhibitions treating the 1930s. There were special lectures also for the popular exhibition *Birds* (made up of works selected from the 1979 annual exhibition for artists specializing in the depiction of birds) and for other exhibitions, and symposia were held in association with the beautifully installed *The American Renaissance* and *Max Weber: Prints and Color Variations*. It was the museum's busiest year for special programs. For the young audience, the ever-active Department of Education held a series of weekend participation days for children and families, concentrating on sculpture and architecture. The annual family day was centered on art from the turn of the century, "A Turn in Time."

The Renwick Gallery, which showed a marked increase in attendance for the year, was especially active with craft demonstra-

tions, lectures by craftsmen, and music and dance performances. Lace making was demonstrated throughout the course of the exhibition of Belgian lace, and the exhibition of traditional Belgian marionettes came vividly to life in performances staged by puppeteers from Belgium, brought as part of the "Belgium Today" celebration. Eleven exhibitions were staged at the Renwick Gallery; six were devoted to crafts from abroad, ranging from Finnish Ryijy rugs, and a historical survey of Georg Jensen silver, to *Costumes of the Arab World*. *A Century of Ceramics in the United States, 1878-1978*, assembled by the Everson Museum of Art, and *New Glass*, produced by the Corning Museum of Glass, attracted wide attention as did exhibitions of individual artists and craftsmen, including the weavers H. Theodore Hallman (whose significant titles were provided by poet Kenneth G. Mills), Lia Cook, and Neda AlHilai, and painter Joyce Kozloff, whose fabric and tile works created a decorated, colorful environment.

In all, NCFM mounted twenty-six temporary exhibitions, plus two that were assembled from the permanent collection for circulation to a consortium of colleges.

A symposium held in Baird Auditorium, organized by Lois Fink, research curator, and sponsored by the Smithsonian Resident Associate Program, examined art and artists in Washington prior to the 1920s. Topics ranged from the Italian artists of the Capitol Building to the artistic activity of Alice Pike Barney (whose Studio House has been much visited by groups this past year), and it was agreed that the history of art in Washington merited continued study. The museum is preparing an exhibition on the subject.

Several new scholars joined the resident group of fellows during the year, and weekly noontime sessions were held for fellows, interns, and staff. New topics of research covered a wide area, from John La Farge to the imagery of skyscrapers.

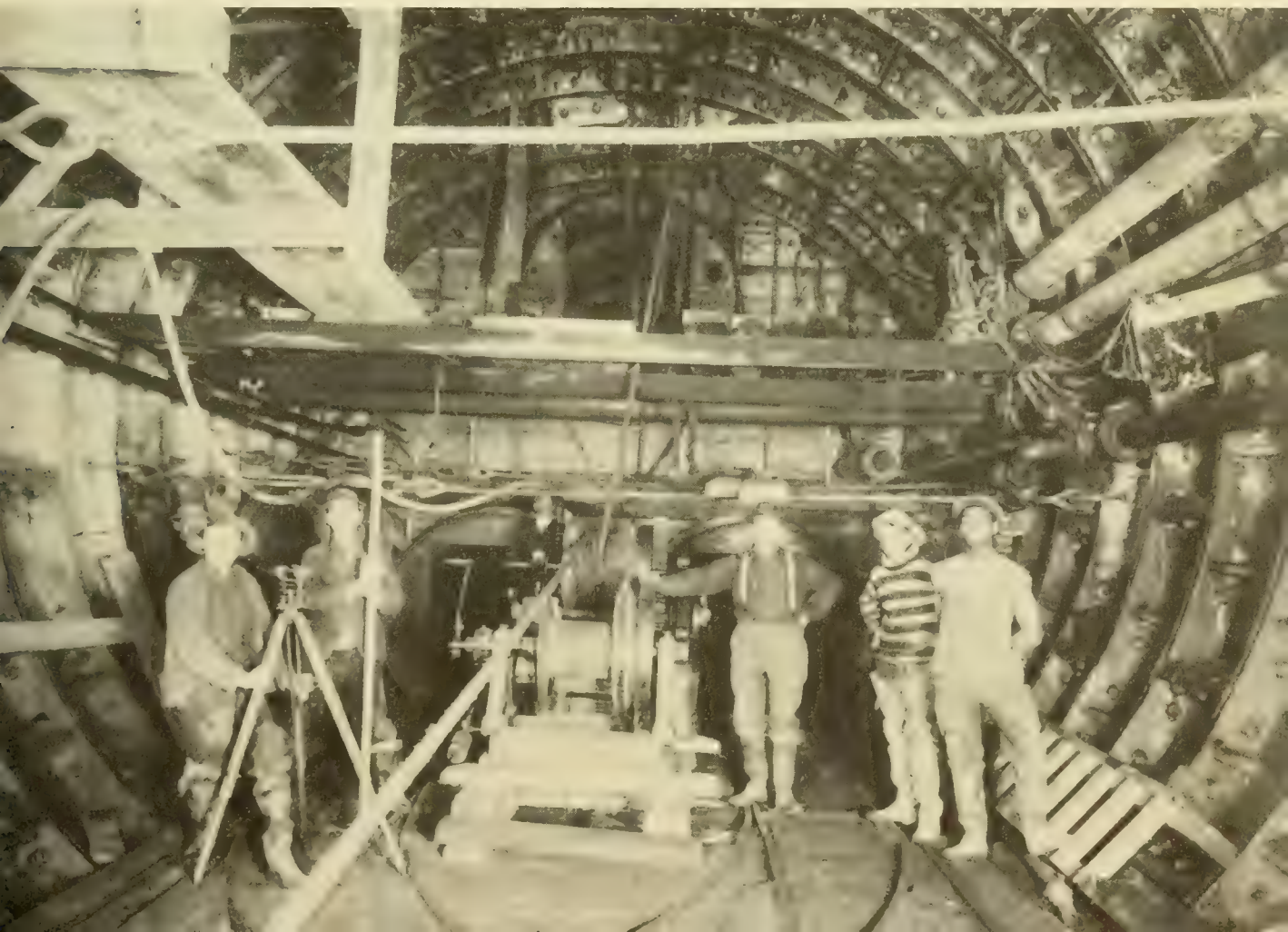
### *National Museum of History and Technology*

There are 16,000,000 items in the collection of the National Museum of History and Technology. Making an inventory takes a while, and getting each item properly described takes skilled and resourceful people. This was the year of the inventory—and it





Secretary Ripley and NCFD Director Joshua Taylor stand with Vincent Melzac (*center*) in front of Clyfford Still's *Indian Red and Black*, one of the works acquired by NCFD from the Melzac Collection. *Below*. Building of New York's East River Tunnel is documented in this NMHT photo, one of a group acquired from a former Pennsy Railroad employee who rescued the pictures from disposal.



was also the year for long-term planning, the results of which will begin to materialize in 1981.

During his first year as director, Roger G. Kennedy has been hard at work with his staff evaluating the museum's strengths and opportunities. Its fundamental mission is clear: to interpret histories of the peoples of the United States primarily through the evidence inherent in material artifacts. Science and technology have provided many of those artifacts; the ways in which they reflect social history is an important part of their story. Therefore, without diminishing our traditional emphasis upon technology, we have been reordering our staff not only to elucidate the recent efflorescence of research into America's social history but also to participate actively in expanding the frontiers of such knowledge.

Toward this end, a series of lectures and panel discussions was organized by Claudia Kidwell, chairman of the Department of Social and National History. Many trailblazing scholars of the new social history, such as David Hackett Fisher, Mary Beth Norton, and Herbert Gutman, addressed the staff and discussed with them current trends, especially the teaching of social history in a museum setting. There was, moreover, a cross-fertilization of ideas among our curators and such prominent museum professionals as Cary Carson, Betsy Blackmar, and Richard Rabinowitz.

In addition to this new emphasis on scholarly interaction, administrative changes have occurred aimed at implementing a series of major public presentations. The arrival from the National Portrait Gallery of Douglas Evelyn as deputy director signaled the beginning of an intense effort at definition and clarification of numerous administrative policies that awaited the arrival of a permanent director. Mr. Kennedy further moved to clarify the mission of the museum by consolidating the four departments into two broad departments. The Department of Social and National History under Mrs. Claudia Kidwell has a vice-chairman, Dr. Gary Kulik, who is an expert in the history of the development of the technology of textile machinery and is also a labor historian. The Department of the History of Science and Technology under Dr. Bernard Finn has a vice-chairman, Dr. Robert Post, who is a historian of the presidency and the American West.

This was a very productive transitional year, with an unusually large number of staff publications and exhibitions. Our major ex-



hibition *Edison: Lighting A Revolution* opened October 10, 1979. The occasion was the centennial of the invention of the incandescent light bulb. Organized by the curator of electricity, Bernard Finn, and historian Robert Friedel, this exhibition presents an overview of the dramatic developments in the history of electricity prior to Edison's invention and in the new age of electrical power afterward. The Niagara Falls power station opened in 1895; within ten years, a thousand central power stations were operating throughout America. Today, the impact of electricity is so pervasive that life without it is difficult to imagine.

This exhibition further focuses on Edison's innovative genius (he secured over one thousand patents), and on the activities of his invention factory, Menlo Park, as well as the activities of Edison's competitors such as George Westinghouse. Included among the artifacts are many examples of the earliest inventions relating to electricity, including a voltaic pile battery from 1805; Edison's laboratory notebooks; and examples of early electrical appliances for the home.

In addition to *Edison*, the museum also staged seven special exhibitions during the year. In connection with Black History Month and coinciding with the twentieth anniversary of the first civil rights movement sit-in, at Greensboro, N.C., the museum presented *We'll Never Turn Back*. Drawn from the work of thirteen photographers who documented civil rights activities in the 1960s, this exhibition was cosponsored by the Program in Black American Culture of the Smithsonian's Division of Performing Arts and Howard University.

Cartoonist Crockett Johnson, creator of Barnaby, had a secret life which was the subject of *Theorems in Color*, organized by Uta Merzbach, curator of mathematics. This exhibition presented thirty-five of Johnson's paintings based upon well-known mathematical constructions such as Euclid's proof of the Pythagorean theorem and the problems related to squaring a circle.

"The Nation's Attic," someone dubbed the Smithsonian long ago. Now this phrase is no longer an embarrassment, particularly since it provided the title for our most popular special exhibition in many years. Appropriately, *The Nation's Attic* opened on April first. Among the one hundred unusual artifacts displayed are Mrs. Abraham Lincoln's chicken-leg silver coffee service, a silk purse made from a sow's ear, and paintings done on cobwebs.



*The Afro-American Tradition in the Decorative Arts* brought together objects, tools, and photographic images of black craftspeople to portray the persistent and dynamic African craft traditions preserved in this country. Richard Ahlborn, curator of community life, staged this exhibition, which arrived here from the Cleveland Museum of Art. In conjunction, the National Museum of History and Technology sponsored a major symposium on the *Afro-American Esthetic*.

*In Touch: Printing and Writing for the Blind in the 19th Century* begins with the founding of the first school for the blind in Paris in 1784 and concludes with the adoption of Standard English Braille in the United States, chronicling more than a century of struggle to bring a full education to the blind. Elizabeth Harris, curator of graphic arts, organized this exhibition which opened September 23, 1980.

In association with the "Folk Puppetry" performance series, sponsored by the Smithsonian's Folklife Series, the museum presented *Puppets, Puppetry, and Things on Strings*. This summer exhibition featured such longtime favorites as Charlie McCarthy and Mortimer Snerd (donated to our History of Entertainment collection by the Edgar Bergen family), as well as marionettes spanning 130 years of the history of American entertainment. Also featured were Kermit the Frog and Howdy Doody. The exhibition was organized by Ellen Roney Hughes of the Division of Community Life.

*Western Views and Eastern Visions* opened July 31, showcasing the photographers and artists who shaped our most enduring images of the American wilderness. The 170 photographs and 15 paintings and drawings reflect the earliest efforts to portray the landscape accurately by the artists who accompanied explorers and scientists on early expeditions to the uncharted American West. Eugene Ostroff, curator of photography, organized the exhibition in cooperation with the United States Geological Survey. After closing here in January 1981, the show will begin a two-year national tour conducted by the Smithsonian Institution Traveling Exhibition Service.

Turning to significant acquisitions: the Division of Numismatics announced in January transfer of ownership of the Chase Manhattan Money Collection to the Smithsonian. This collection—more

than 25,000 artifacts—comprehends the best collection to be found in America of currency from non-Western cultures and from ancient times. It also includes American colonial coins dating back to 1652, the first silver dollar minted by the United States (in 1794), and checks signed by every United States president and by such notable individuals as Susan B. Anthony, Charles Dickens, and Helen Keller. With this addition, the National Numismatic Collections must be considered among the foremost research collections of their kind in the world.

The Division of Military History was the beneficiary of the most important addition to its military collection in the past fifty years, from the estate of the late C. Bremmer Hogg Jackson of Bucks County, Pennsylvania. It includes Greek Bronze Age armor from the fifth century B.C.; a four-powder cannon cast during the American Revolution and used in Colonel Paul Revere's Penobscot Bay Campaign of July 1799; and an exquisite jeweled sword presented by the City of London to Rear Admiral Charles Sterling. Among the 3,700 other items are rare examples of uniforms worn by American militia during the Revolution, and Confederate uniforms from the Civil War.

There were many other significant acquisitions, though space in this text precludes mentioning all but a few. The Division of Political History announced the gift of a Bible owned by President Millard Fillmore and three pieces of furniture belonging to Susan B. Anthony. The Division of Musical Instruments acquired a clavichord made by Johann Adolf Hass in Hamburg in 1756 and folk instruments made specially for the Smithsonian by black musicians in the Delta Mississippi area. To return to the more mundane activity mentioned at the outset—inventory—all these artifacts great and small have been duly recorded as the museum proceeds with functions routine as well as exceptional.

### *National Portrait Gallery*

The most important event to take place at the National Portrait Gallery during 1980 was the acquisition of the portraits of George and Martha Washington by Gilbert Stuart from the Boston Athenaeum under an agreement which provides for joint owner-

ship of the portraits with the Museum of Fine Arts in Boston. These paintings will be on display at the National Portrait Gallery until the spring of 1983 when they will go to the Museum of Fine Arts, Boston, in accordance with an agreement providing for alternating three-year exhibition periods at each institution.

Two of the gallery's most important staff members moved on to other positions during the year. Douglas E. Evelyn, who had been with the gallery since 1969 as administrative officer, assistant director, and deputy director, accepted the deputy directorship of the Smithsonian's National Museum of History and Technology. William B. Walker, librarian of the National Collection of Fine Arts / National Portrait Gallery Library since its inception, resigned to become chief librarian at the Metropolitan Museum of Art in New York.

Two special publications were produced by the gallery in 1980. The first was a revised edition of the *Illustrated Checklist of the Permanent Collection* (Smithsonian Institution Press). In addition, the gallery entered into an agreement with Somerset House to publish and distribute internationally a color microfiche edition of the *Checklist*, the first edition of which will be available by the summer of 1982. Both the book and the microfiche edition will be updated biennially. The second special publication of the year was the microfiche edition of *The Collected Papers of Charles Willson Peale and His Family* (Kraus Thompson Organization, Ltd.), prepared by Dr. Lillian B. Miller and her staff, who are now engaged in editing and annotating a letterpress edition of the Peale Papers (Yale University Press), the first volume of which will be published in the spring of 1982.

Research is nearing completion on two other special publications, a definitive catalogue of *The Portrait Engravings of C. B. J. F. de Saint-Mémin* being compiled by Dr. Ellen G. Miles, associate curator of painting and sculpture; and a definitive catalogue of *American 18th Century Portrait Prints* being prepared by Ms. Wendy Wick, curator of prints. Ms. Wick has also overseen final preparation of reports, presented last year at the gallery for the tenth annual American Print Conference, for publication by the University Press of Virginia in 1981.

The gallery's Catalog of American Portraits, which currently has records (and in most cases photographs) of more than 60,000



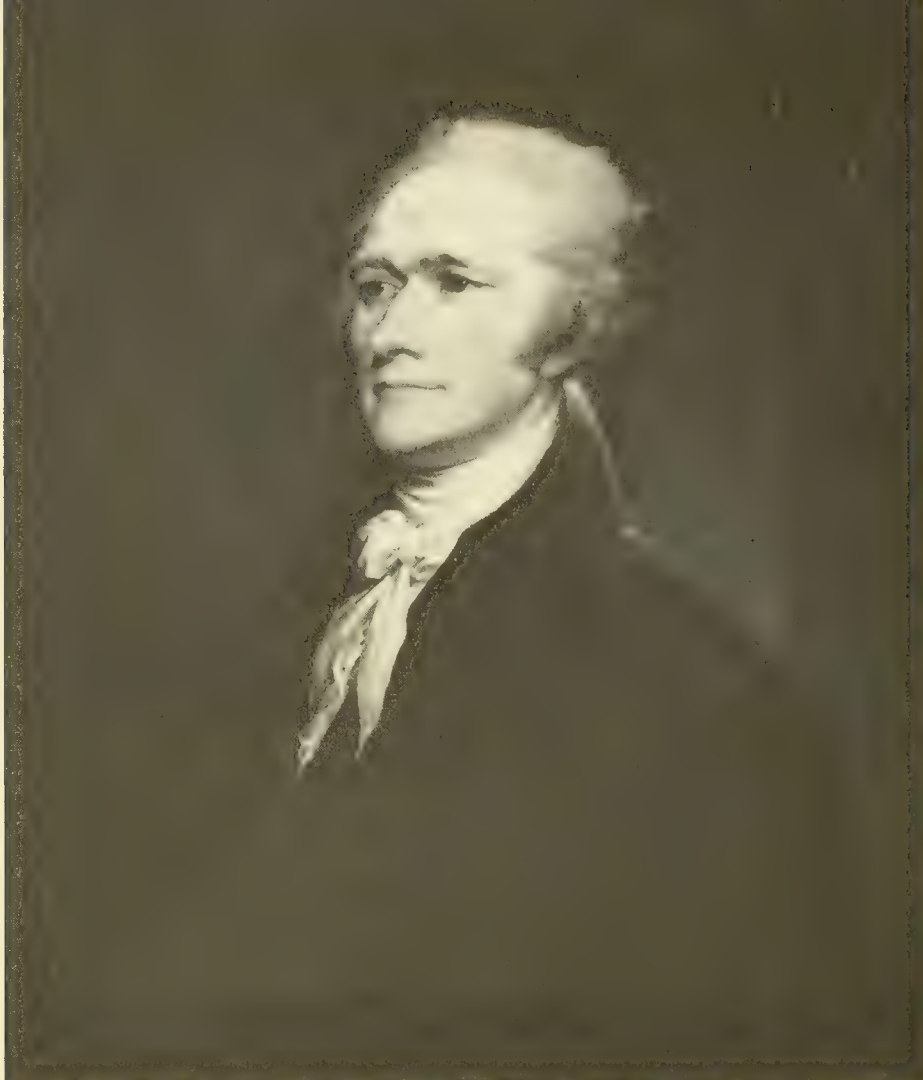
American portraits in public and private collections throughout the country, completed the second year of a projected seven-year, nationwide survey. Three field researchers worked in New York City, Connecticut, Rhode Island, and Massachusetts. Over 7,500 files from the first year of the project are now being processed, and indexes of regional collections (in microfiche and/or printed formats) soon will be placed in selected depositories in the first states to be surveyed: Delaware, Maryland, Virginia, West Virginia, New Jersey, and Pennsylvania. This project has been supported by major grants from the Andrew W. Mellon Foundation, the Thomas Mellon Evans Foundation, and the Ambrose Monell Foundation, as well as by significant contributions from several other sources.

The gallery's Office of Education presented nine events in its "Portraits in Motion" series. Among this year's offerings were Eugenia Rawls's *Tallulah Bankhead* and appearances by performers interpreting the personalities of Edna St. Vincent Millay, Isadora Duncan, and Harriet Tubman.

Nobel Prize-winning novelist Isaac Bashevis Singer spoke in the gallery's "Living Self-Portrait" series, and his address, which was entitled "My Life as a Jewish Writer," was preserved on videotape.

*Robert Edge Pine, A British Portrait Painter in America: 1784–1788* opened on November 1, 1979, as the first of the gallery's major exhibitions for this year. Over thirty-eight portraits by this little-studied artist of the early Federal period were on view through January 6, 1980. The exhibition was organized by the gallery's curator of painting and sculpture, Robert G. Stewart, who also wrote the accompanying catalogue, published by the Smithsonian Institution Press. On May 1, 1980, the gallery opened its second major exhibition, *American Portrait Drawings*, a collection of ninety-six works by seventy-five artists from the eighteenth century to the present. The drawings were selected by the gallery's director Marvin Sadik, and the assistant director Harold Francis Pfister, who jointly wrote the exhibition catalogue, also published by the Smithsonian Institution Press.

Several small exhibitions were organized through the course of the year by Frederick S. Voss and Michael L. Lawson. Opening in October 1979, *The Great Crash* marked the fiftieth anniversary of the stock market collapse and the onset of the Great Depression;



The portrait of Alexander Hamilton by John Trumbull is a major gift to NPG. *Below.* After his lecture on "My Life as a Jewish Writer," Isaac Bashevis Singer (*right*) spoke with NBC's Bernard Kalb at the National Portrait Gallery.



in January 1980, a small collection of works and memorabilia highlighted the career of Howard Chandler Christy, creator of the famous Christy Girl. *Waiting for the Hour*, which opened in March, was a study of the events and personalities surrounding Abraham Lincoln's historic decision to issue the Emancipation Proclamation. In June the gallery presented *Zelda and Scott: The Beautiful and Damned*, which included seventy-seven items (portraits of the Fitzgeralds and their friends, manuscripts, and memorabilia). *Unsuccessful Candidates for the Presidency: 1912-1976* was opened in a gallery adjacent to the Hall of Presidents in July; and in August *Why Not a Woman?* recalled the 1884 presidential campaign of Belva Ann Lockwood, who was also the first woman to practice law before the Supreme Court.

During the year, 273 portraits were added to the Permanent Collection, thirty-nine of them by gift. Among acquisitions by purchase were oils of George Washington, probably done from life, by Robert Edge Pine; William Shirley, a colonial governor of Massachusetts, by Thomas Hudson; and Commodore William Bainbridge by Rembrandt Peale. Photographic purchases included daguerreotypes of Harriet Beecher Stowe and of President Chester A. Arthur as a young man.

Among the most important portraits that came by gift were oils of Alexander Hamilton by John Trumbull, from the Honorable Henry Cabot Lodge; Fisher Ames by Gilbert Stuart, from George Cabot Lodge; August Belmont by Wouterus Verschuur, from Paul Mellon; Edgard Varese by John Sloan, from Helen Farr Sloan; and miniatures of Jefferson Davis and his wife Varina Howell Davis, from their great-grandchildren, Varina Webb Stewart and Joel A. H. Webb. The Margaret Hall Foundation presented an oil of Benjamin West by James Smith; and the James Smithson Society continued its annual generosity to the gallery by providing funds for the purchase of a hitherto unknown self-portrait of Samuel F. B. Morse painted when he was a young student of art.

### *Office of American Studies*

The Office of American Studies continued its program in graduate education throughout the year. The fall 1979 semester in "Material



Aspects of American Civilization" had as its theme: Costume and Clothing as Artifacts of American Civilization. Taught by the director of the program and Professor Bernard Mergen, of George Washington University, the course was enriched by the expertise provided from staffs of the National Museum of History and Technology, Folklife Programs, and other area museums. Twenty-two students were enrolled.

Other seminars given during the academic year 1979–80 included: "Use of Material Objects in Historical Research and Interpretation," taught by Bernard Mergen; "The Civic Center in America," taught by Cynthia Field; and "The American Decorative Arts," taught by Barbara G. Carson. Members of the Folklife Programs staff also taught several courses in aspects of American folklife, as noted in their report. Individual graduate students continued to pursue specialized research under the supervision of the director of the Office of American Studies.

A seminar entitled "Material Culture in America, 1775–1825" was taught by the director of the Office of American Studies, for Smith College interns in Washington in the fall of 1980.

The director of the Office of American Studies, in his capacity as chairman of the Folklife Advisory Council, conducted three meetings of the council to review the progress of the Folklife Programs unit, and to recommend to the Secretary future directions in folklife activities at the Smithsonian.

During the academic year 1979–80, the director of the Office of American Studies delivered lectures and participated in several international meetings including: European Association of American Studies meeting at the University of Amsterdam, Netherlands; German Association for American Studies' Annual Meeting at Wolfenbüttel, West Germany; conference on "The American Indian" held by the Nordic Association of American Studies at the University of Helsinki, Finland; conference on "The American Indian" organized by Amerika Haus, West Berlin, Germany; 15th International Congress of Historical Sciences, Bucharest, Romania; 15th Annual Meeting of the Korean American Studies Association, Kyongju, Korea. The director also delivered lectures before the Singapore and Jakarta academic and cultural communities. He also was a Phi Beta Kappa lecturer October 1979 through April 1980,

and in this capacity visited nine campuses in the United States to deliver lectures.

The bicentennial exhibition *The Federal City: Plans and Realities*, of which Dr. Washburn was the scholar-in-charge, was extended for an additional two years, from February 1980 to February 1982. A number of articles in the exhibition, which occupies the Great Hall of the Smithsonian Institution Building, have been changed to update this popular exhibition.

### *Office of Folklife Programs*

Most Americans would agree that the richness of the nation's culture lies in the impressive diversity of its people and in their creative responses to historical conditions. Research, presentation, and preservation of this cultural wealth is the goal of the Office of Folklife Programs. This effort entails the presentation of living folk traditions in the context of the Smithsonian. Since its inception, the Office of Folklife Programs has directed its attention to the identification and study of these folk traditions and to the development of methods for presenting them in a national setting to general audiences. As an academically oriented program, the Office of Folklife Programs also pursues university teaching; research into foreign folklife traditions to shed light on cultures that have taken root in American soil; and the publishing of documentary and analytic studies.

#### *FESTIVAL OF AMERICAN FOLKLIFE*

The staff of the Office of Folklife Programs planned and supervised the research and presentation of the thirteenth annual Festival of American Folklife held on the National Mall October 3–8, 1979. Among the highlights of the festival were a Caribbean Carnival with participants from United States east-coast cities, Toronto, and Montreal; the re-creation of an old-time medicine show with pitchmen and musicians who had participated in the last of these shows in the 1930s and 1940s; and a presentation of the traditions of Washington-area Vietnamese Americans. For the only time in the history of the festival, all regularly scheduled programs were re-

placed by a concert of folk religious music on Sunday, October 7. This concert preceded the historic occasion of the celebration of a Mass on the National Mall by Pope John Paul II. The National Park Service continued its cosponsorship of the festival, and funding support was provided by the Music Performance Trust Fund and the Department of Energy.

The festival was also used, again for the first time, as a laboratory for a course entitled "Living Resources in Museums," which was offered by the Office of Museum Programs Workshop Series. Dr. Robert Byington, former deputy director of the Office of Folklife Programs, drew on twelve years of Smithsonian Festival of American Folklife experience to provide professionals from museums throughout the United States with insight and instruction in the use of human resources within a museum setting.

For the third consecutive year, on September 20, 1980, the Office of Folklife Programs provided an orientation session for Washington-area teachers two weeks before the fourteenth annual Festival of American Folklife. Held in cooperation with the Office of Elementary and Secondary Education, this session was designed to orient teachers not only to the festival's programs but also to the methods, challenges, and rewards of incorporating folklife projects and studies into elementary and secondary school curricula.

In the course of preparing for the 1980 festival, Abby Watkins Bernon, a valued colleague and member of the staff from 1971 through 1976 and a temporary employee in 1980, was fatally injured in an automobile accident that occurred in the course of her day's work. The festival program book and closing concert were dedicated to her memory.

#### SPECIAL EXHIBITIONS

Following the 1979 festival, the Office of Folklife Programs organized and presented traditional craft demonstrations during the opening week of the exhibition *The Afro-American Tradition in Decorative Arts*, which was held in the National Museum of History and Technology October 15–December 30, 1979.

A second special exhibition was developed from research funded by the Smithsonian Foreign Currency Program and supervised by the Office of Folklife Programs. The research laid the groundwork for presentations by traditional puppetry groups from India and





Ernest Doyebi makes a Kiowa summer arbor at the Folklife Festival. *Below.* Ahamd Sharawi, street puppeteer from Cairo, Egypt, and his Aragouz entertain at the International Puppetry Congress.



Egypt which were held on the National Mall in June 1980. These groups were joined by the Italian-American Manteo family from New York City who have kept alive a tradition—which dates from the sixteenth century—of using almost life-sized marionettes. The Smithsonian puppetry program was produced in cooperation with Puppeteers of America, which had organized a citywide network of puppetry events in honor of the Thirteenth World Congress of UNIMA (*l'Union Internationale de la Marionnette*). The performances were made possible by grants from two sources: one from the National Endowment for the Arts to Puppeteers of America; the other from the Smithsonian Educational Outreach Program to the Office of Folklife Programs.

#### ARCHIVES

The archive of film footage from the 1976 Bicentennial Festival of American Folklife arrived at the Office of Folklife Programs in July 1980. The archive, consisting of 144,000 feet of film and accompanying sound track covering twelve cultures in the United States and abroad, was logged and cross-indexed by culture. In addition, the entire body of footage was synchronized with its sound track.

Work began in the summer of 1979 on a project to preserve more than 3,500 wax-cylinder recordings at the Library of Congress, principally containing Native American songs and stories recorded prior to 1930. Dr. Thomas Vennum, the ethnomusicologist of the Office of Folklife Programs, serves as director for this project, which involves the transfer of fragile cylinder recordings to magnetic tape, the preparation of accompanying written material, and the development of suitable means for the dissemination of these historic cultural documents.

#### RESEARCH

Supported in part by a grant from the Smithsonian Institution Scholarly Studies Program, Dr. Peter Seitel, the senior folklorist of the Office of Folklife Programs, spent the spring and summer of 1980 continuing his investigations into Haya oral traditions. The Haya, a Bantu-speaking people, have a rich folklore tradition. Heroic epics, the subject of the research, were studied stylistically, as performance, and as indicators of cultural values.



Another aspect of Dr. Seitel's research explored the ethnoastronomical knowledge of the Swahili-speaking peoples of the Kenya coast, with special emphasis on how this cultural system is used to interpret a total eclipse of the sun, which occurred on February 16, 1980. The study documented indigenous celestial knowledge such as star and planet identifications, time reckoning and astronomical measurement, navigation, and ideas of celestial causality.

#### *VISITING SCHOLARS*

Five visiting scholars used the Office of Folklife Programs' archives as well as the scholarly resources of the staff during 1980. David Whisnant (Ph.D., Duke University), associate professor of English and American Studies at the University of Maryland, is working on a historical analysis of institutional intervention in traditional culture in Appalachia and the southeastern United States. Robert Winans (Ph.D., New York University), associate professor of English and folklore at Wayne State University, is working on a historical and geographical survey of pre-bluegrass traditional banjo-playing styles. His research involves both using Smithsonian archival recordings and conducting field work in areas where banjo-playing has not been well documented. Barry O'Connell (Ph.D., Harvard University), associate professor of English and American Studies at Amherst College, is conducting research on coal miners and the coal-mining industry between 1930 and 1960. Michael Harris (Ph.D., Harvard University) is conducting a study of Black American liturgies, with special attention to folk rituals of worship and the use of musical instruments. Robert McCarl, a doctoral candidate in folklore at the University of Newfoundland, is doing research on the occupational folklife of the fire fighters in the Washington, D.C., area.

#### *APPOINTMENTS*

In December 1979, Ralph Rinzler, director of the Office of Folklife Programs, was elected to the office of vice-chairman of the United States National Commission to UNESCO to which he was reappointed by the Secretary of State. He also was appointed by the chairman of the commission to the position of chairman of the Cultural Committee.





A Smithsonian delegation led by Paul N. Perrot, Assistant Secretary for Museum Programs, visited the People's Republic of China at the invitation of the Scientific and Technical Association November 12 to December 2, 1979, to explore opportunities for research and museum exchanges. The delegation was welcomed in the People's Palace on November 18 by Vice-Premier Fang Yi, who is responsible for Chinese science and technology. Shown here are (*left to right, front row*) Martin Moynihan, Smithsonian Tropical Research Institute; Han Shu, Director of the Department of American and Oceanian Affairs of the Chinese Ministry of Foreign Affairs; Mr. Perrot; Vice-Premier Fang; Mao Yishen, Vice-Chairman of the Association; Theodore H. Reed, National Zoological Park; Mrs. Wang Zheng, Director, Foreign Affairs Bureau of the Association; Thomas R. Soderstrom, Department of Botany; (*second row*) member of the Vice-Premier's staff; Tung Lin Wu, Chesapeake Bay Center for Environmental Studies; Thomas Lawton, Freer Gallery of Art; Donald R. Davis, Department of Entomology; William B. Trousdale, Department of Anthropology; Robert M. Organ, Conservation Analytical Laboratory; Marvin S. Sadik, National Portrait Gallery; (*third row*) Yu Chi-yu, Association; Liu Lu, Chinese Academy of Sciences; Interpreter for the Vice-Premier; Hsu Wei-shu, Beijing Museum of Natural History; J. Laurens Barnard, Department of Invertebrate Zoology; and Miss Sung Ju-fen, Association. Richard E. Grant (not shown here), Department of Paleobiology, joined the delegation later.

## MUSEUM PROGRAMS

PAUL N. PERROT,  
ASSISTANT SECRETARY FOR MUSEUM PROGRAMS

### *Conservation Analytical Laboratory*

The Conservation Analytical Laboratory (CAL) is responsible primarily for advising and assisting Smithsonian museums in preserving and conserving the national collections. It provides an extensive range of expert services for this purpose.

CAL continues to monitor seventy-five sites within the Smithsonian museums by the deployment of hygrothermographs to those areas where environmental control is vital to the preservation and conservation of the national collections. Approximately six hundred containers of recently accessioned objects were fumigated prior to admission into the collections. One hundred and fifty-five written requests for services of conservation were recorded in CAL with queries ranging from one involving "fish-embalming fluid" to one requiring the x-radiography of an Egyptian mummy.

A total of 118 CAL reports were completed and entered into the Termatrix Information System this fiscal year. To date, more than fifteen hundred reports have been abstracted and entered into the computer system by information specialists Marjorie Cleveland and Quentin Maule. Of these documents, twelve hundred were CAL reports and three hundred were acquired from the Anthropology Laboratory of the National Museum of Natural History. Eleven hundred reprints were acquisitioned for the rapidly developing information center, bringing the total to 4,448 in the system; 878 have been keyworded this year. An interesting search of the *Art and Archeological Technical Abstracts* through access of the computer in the British Museum provided information for the shipping



office in the National Museum of History and Technology regarding possible hazards to valuable museum objects should the polyurethane or polyethylene used in packing deteriorate; another search cited early uses of inorganic fungicides. Approximately ten thousand conservation guidelines were mailed. All the demands for information from the public cannot be met because of inadequate staffing and limited space.

Karen Preslock was appointed CAL's first branch librarian in October. A postdoctoral fellowship in the Office of Fellowships and Grants was funded and a candidate selected to work on textile conservation.

#### CONSERVATORS' REPORT

Senior conservator at CAL, Walter Angst, contributed to the lunch-bag seminars at the National Portrait Gallery/National Collection of Fine Arts—on the topic "What makes a furniture conservator different from a wood butcher?" Having been instrumental in forming the group, Angst was elected chairman of the American Institute for Conservation of Historic and Artistic Works (AIC) Specialty Group for conservators of furniture and wooden objects at the annual meeting of the AIC, May 22–26 in San Francisco, California. Angst also founded and edits this group's first newsletter, *Finwoof*. On July 2 he presented a paper at the Canadian Conservation Institute symposium in Ottawa titled "Ethics in Scientific Furniture Conservation."

A variety of noteworthy projects were completed by the conservation staff and simultaneously contributed to CAL's Conservation Guidelines. Conservation projects included a horn chair, a bentwood cradle, a Flemish cabinet, a side chair with perforated plywood seat (a report on this by Angst is currently on press at the AIC), a pearl necklace for the First Ladies' Hall, forty-six molds to be used as sensory aids for the blind in the *In Touch* exhibition, twenty-three archeological objects from a site in Louisiana dating from ca. 1735, and General Sheridan's saddle.

#### SCIENTISTS' REPORT

The CAL scientists had several interesting projects this year. The biggest—over two acres in area—was explaining why the new roof of the Arts and Industries Building drips during fine weather in



early summer (CAL report no. 3366). It seems that condensation occurs in winter just inside the outer skin of the lead-coated copper. Soluble fireproofing salts leach out of the plywood that underlies the copper and collect on surfaces within the roof and on the iron beams supporting the roof. In early summer the direction of air flow reverses: the warm, moist outside air cools as it passes through to the interior. The air gives up its moisture to the salts which reliquefy and drop to the floor as a saturated solution. This theory will be tested by monitoring temperature and relative humidity within the roof through the winter and into next summer.

The problem of damage caused by materials within an object or in materials used to display or store the object has become a major preoccupation of the lab. The main cause of trouble is acetic acid which diffuses out of wood and corrodes many materials. (Examples of corrosion of this sort were shown in last year's annual report.) This year another remarkable example was found: a cowrie shell of aragonite (calcium carbonate) deeply corroded to form calcium acetate and calcium formate (no. 3472). It had been stored for several years in a small oak box.

Sometimes damage is caused by substances within the object itself. Two such cases were investigated this year. One was a pair of aviator's goggles (no. 3463) whose rubber parts had become soft and sticky at the surface. This was because soap was used during manufacture to emulsify the rubber so that it could be poured as a liquid into a mold. The soap was trapped in the rubber as it set by loss of water. Soap is not soluble in rubber so, over a long time, it migrates to the surface.

A rather similar problem turned up on a roll of film from the National Archives (no. 3492). Crystals of triphenyl phosphate encrusted the edges of the film and had also grown between the film base and the emulsion. Triphenyl phosphate is used as a plasticizer in cellulose diacetate film base. The film probably contained a residue of acid left from manufacture. This acid slowly hydrolyzed the film to cellulose, giving off acetic acid, which could be smelled on opening the can. Triphenyl phosphate is insoluble in cellulose and so it migrated out to the surface.

Atmospheric moisture is necessary for the stability of absorbent materials but it also causes trouble by chemical reaction. Some blue beads decorating a skin tunic had decomposed the leather thongs

on which they were strung whereas beads of other colors caused no damage (no. 3527). CAL scientists made a cross section of the beads and studied them under the electron microprobe belonging to the Smithsonian's Department of Mineral Sciences. The bad beads proved to be made of a glass containing sodium which had suffered replacement by hydrogen from atmospheric moisture. The sodium migrated to the surface to form sodium hydroxide, a strong alkali that quickly reacts with atmospheric carbon dioxide to form sodium carbonate which is also sufficiently alkaline to gelatinize and weaken leather.

Excessive moisture was also troubling the fish collection. The Department of Fishes at the National Museum of Natural History stores its catch in vats filled with a mixture of alcohol and water which was becoming too wet because alcohol evaporates more rapidly than water from the mixture (no. 3471). CAL scientists confirmed the accuracy of the assay method used by the Fishes staff and worked out a formula for calculating the alcohol concentration needed for topping up the tanks.

The human touch is a major cause of trouble for museum objects, particularly for absorbent materials such as paper. CAL scientists worked out a way of replicating the pattern of embossed paper so that blind people may enjoy *In Touch*, an exhibition of apparatus and books for the blind organized by Elizabeth Harris. Standard methods of copying embossed paper are not safe for museum objects. CAL devised a method (no. 3495) in which the paper is enclosed in an envelope of thin rubber. A partial vacuum is applied so that the rubber is pulled close to the paper on both sides without any crushing effect on the embossed pattern. Then several layers of rubber emulsion are swiftly painted onto the top surface. The water in the emulsion is absorbed by a dusting of dry silica gel. This inhibits water from diffusing through the thin rubber envelope and softening the paper. It also strengthens and stabilizes the rubber mold. The resulting flexible mold bears an accurate negative image of the paper. A positive copy can be made in several ways such as electroplating, plaster casting, or, as for this exhibition for the blind, casting in epoxy resin reinforced with glass fibers.

A continuing problem for conservators and curators is knowing which modern materials to trust for use on or around museum objects. The composition of many industrial products is secret and

the formulation of a named product may change without warning, even from one batch to the next. CAL scientists tackle this problem in two ways. Commercial products are tested in the lab for their effects on objects without identifying all the substances in them. For example, some colored felts were tested for their suitability for use in a display of clocks (no. 3529). Small samples of felt were wrapped around silver foil, put into a glass tube, and placed in an oven at 50° C and about 50 percent relative humidity. The silver rapidly tarnished, indicating that the felt had given off hydrogen sulfide and would probably slowly evolve this gas even at museum temperature. This sort of testing is useful and simple—but rather wasteful of effort because it only applies to one material to be used for one event and the work may have no value to anyone else. Sometimes CAL staff puts in effort to identify the components of a commercial product, find out why it works well, and whether it is likely to be safe. As a final check we synthesize our own version. Over the years, the staff expects to build up a select list of conservation materials of known effectiveness and of openly published composition.

#### ADMINISTRATION

The role of audiovisual materials in the Conservation Analytical Laboratory continued to play an important part in education and diffusion of knowledge as twenty-six participants attended the eighty, one-hour sessions of lectures on conservation orientation, with nine people completing the series and receiving certificates.

#### ARCHAEOOMETRY REPORT

Joan Mishara was awarded a year of sabbatical leave in order to conduct research on ancient cements, doing field work in Cyprus and laboratory studies in the Materials Research Laboratory of the Pennsylvania State University.

An investigation of the use of electron microprobe analysis of ceramics was carried out in collaboration with the Department of Mineral Sciences. The results were presented at a Smithsonian/National Bureau of Standards seminar on "Ceramics as Archeological Material" as one of twenty-three papers by a group of archaeometrists representing seven countries.



CAL has funded a project in the Chemistry Department at Brookhaven National Laboratory which involved developing a small-scale gas proportional counter to date very small carbon-14 samples, or objects with very low carbon contents. The counters were first tested with known samples of sequoia redwood. Samples dated (by tree ring) to be between 37 and 31 B.C. yielded a radio-carbon date of 32 A.D.  $\pm$  190. An iron bloom attributed to the sixteenth-century English explorer Martin Frobisher was discovered in the southern reaches of Baffin Island by the party of Charles F. Hall and given to the Smithsonian Institution in the nineteenth century. The bloom contains approximately 0.05 percent carbon and could be dated at Brookhaven. The dates obtained are 1158 A.D.  $\pm$  107 and 1271 A.D.  $\pm$  133. This suggests an earlier source for the bloom than the sixteenth-century source to which it was traditionally attributed.

### *National Museum Act Programs*

Through its programs of grants, and in keeping with the original authorizing legislation of 1966, the National Museum Act (NMA) continued to provide support for professional training for careers within the museum profession, for special studies investigating critical museum problems, and for technical assistance to the museum field. As in the past, the 1980 guidelines describing the grant programs stressed the importance of the conservation of museum collections and encouraged the submission of applications for conservation training and research projects.

In 1980, 156 applications requesting a total of \$2,755,000 in support were received. This amount was far in excess of the program budget of \$802,000. After review by the Advisory Council, fifty-nine grants were awarded for a total of \$691,000 and an additional \$24,000 was approved for the three special studies or activities described below. Thirty-one of the grants and one of the special activities dealt directly with conservation training, research, and studies, and more than \$350,000 was applied to these purposes.

Because of the limited funds available, grants given to applicants were, in almost every instance, for amounts less than had been

requested. These reductions were necessary to assure a useful degree of support for the best applications in each grant category. Applications received in 1980 reflected the sharp rise in the cost of education, and, because of the still acute need for well-trained personnel in all phases of museum work, particularly in conservation, two-thirds of the 1980 grant funds were applied to stipends for conservation training, graduate/professional museum studies, internships, seminars, and travel/study programs. Since educational costs continue to rise, a similar distribution of available grant funds may be likely in 1981.

Grantees are required to provide reports during and at the conclusion of grant-supported activities. Reports filed in 1980 contain considerable evidence of benefits resulting from NMA support for museum training over the last several years. Trainees have been able to progress to advanced levels of study in conservation theory and practice; many have joined conservation departments of major museums and others are developing specialized skills needed to care for collections containing textiles, paper, paintings, and archeological and ethnological materials. Graduate and professional museum study programs, and internships, have produced personnel knowledgeable in curatorial and managerial practices that are important not only to museums but to zoological parks and herbaria as well. Seminars, offered at both the regional and local levels, have made it possible for a large number of people to acquire new or updated information on a wide range of museum subjects. Reports from grantees also show that the quality of museum training programs has improved substantially over the years; in many institutions, degrees or certificates are now awarded for museological and conservation studies.

During 1980, the NMA Advisory Council, recognizing that most of the support for museum training was given to persons seeking to establish careers in museum work, developed a new grant category to be offered in 1981. This category, Fellowships in Museum Practices, will give established museum personnel an opportunity to enhance their professional competence or acquire new skills and information through "refresher" courses or other study arrangements. To meet their responsibilities, museums are finding it necessary to use new technologies such as computers to apply new management principles to their operations, and to strengthen

the educational portions of their programs. This new grant category will allow those presently working in museums to learn more about these and similar topics.

As a means of assessing important museum issues and to assure that specific grant categories effectively address real needs, the Advisory Council has from time to time recommended that special studies be made of critical problems for which little precise information exists. In 1980, three such special studies or activities were authorized. One, closely related to the new Fellowships in Museum Practices grant program, dealt with mid-career training for museum personnel and brought together museum and educational experts to define standards and recommend suitable curricula for such training. Another conference provided a forum for representatives of visual resources collections and information science professionals to discuss problems of indexing and retrieving visual image data, a matter of great concern for institutions holding masses of visual materials. Participants came from the Library of Congress, International Museum of Photography, Harvard Semitic Museum, Yale Center for British Arts, National Collection of Fine Arts, Public Archives of Canada, and other distinguished organizations. The third special study or activity was an interdisciplinary conference on the general problem of fumigating museum collections, a complex matter affecting conservation and curatorial procedures, legal and regulatory obligations, the effectiveness of pesticides, and the identification of pests and the kinds of damage they do. The reports being prepared as a result of these special studies will not only guide the Advisory Council, but also be of great value to the entire museum field and its professional associations.

Results of prior year grants for research projects in conservation and other fields also became evident this year. A proposal supported in 1976 for the development of a personnel policy manual for museums produced a report that has now evolved into a book, *Personnel Policies for Museums: A Handbook for Management*, by Ronald L. Miller of the University of Illinois, published this year by the American Association of Museums. New information on the causes of deterioration of nineteenth-century albumen photographic prints, which form part of the collections of many museums and historical organizations, has come to light through research being conducted at the Rochester Institute of Technology. This



information will prove helpful in establishment of standards for optimum storage conditions for such prints, and will contribute to the development of new restoration treatments for them. A major research report, the product of a cooperative project between the University of Maryland and the Washington Conservation Center, has been completed and filed with the National Museum Act office. The research led to the development of an analytical procedure to be used to study the effects of environmental and human actions on fabric-supported oil paintings, thus providing a way for failure mechanisms to be better understood. As part of the research, a mathematical model was developed to permit numerical verification of the effect of various influences on paintings. It is expected that when disseminated the report will generate great interest within the conservation profession.

The diversity and range of research and study grants made by the Advisory Council are illustrated by all the examples described. Throughout the year, the National Museum Act office maintained close liaison and exchanged information with agencies and other organizations that make grants to museums. The office has also prepared a brief summary of its grant programs for inclusion in a special catalogue of grant opportunities being prepared and distributed by the Federal Council on the Arts and Humanities.

In 1980, the National Museum Act was reauthorized for fiscal years 1981 and 1982.

### *Office of Exhibits Central*

On the last day of fiscal year 1980, the Office of Exhibits Central (OEC) packed and shipped the Smithsonian Institution Traveling Exhibition Service (SITES) exhibition *The Contemporary American Potter: New Vessels*. It was one of twenty-four new SITES exhibitions designed, edited, and produced by OEC this year. At the same time, the first exhibitions for the OEC/SITES fiscal year 1981 schedule were being completed: two editions of *Jupiter and Its Moons*—one show to open at the National Air and Space Museum on October 9, the other to open in Cincinnati on October 18. For this exhibition, the Models, Plastics, and Restoration Unit (MPR) of

oec had built highly detailed scale models of the Voyager spacecraft. MPR modelmakers were also beginning to work on a life-size model of a late-Cretaceous period flying reptile with a wingspan of 40 feet; *Quetzalcoatlus northropi*, which had required about two years' study working with several small-scale models, was made to be suspended in the dinosaur hall of the National Museum of Natural History (NMNH). oec's Motion Picture Unit was completing, at the same time, a nine-minute film to be shown in NMNH's new *Coral Reef* exhibition, which opened in mid-October. Such was the pace and the variety of tasks that began—and highlighted—the year for the Office of Exhibits Central.

A total of 319 requests for participation in or assistance on the exhibitions and the exhibit-related activities of the Institution's bureaux, museums, and program offices were recorded by oec this year; more than 225 were completed. As in each year since the office was established, oec worked with just about every Smithsonian unit on the National Mall and beyond. A sampling follows. Certain oec staff again served as faculty for Office of Museum Programs (OMP) professional workshops in Washington, and trained interns—from the United States and abroad—in oec shops and offices. Workshops were also given by oec in several American cities in conjunction with the programs of OMP, the Smithsonian National Associate Program (SNAP), and the North American Indian Museums Association. Jim Mahoney, oec chief, traveled to Kuwait to serve on an international committee to advise on the planning for a new National Museum of Kuwait. John Widener, assistant chief, and Karen Loveland, director of the Motion Picture Unit, both visited Puerto Rico to advise on planning for the National Museum of Natural History of Puerto Rico. Assistance and guidance were also provided to other United States government offices, to other museums, and to educational institutions. The Freeze-Dry Laboratory, for instance, completed a 34-pound beaver (after two and a half months in the freeze-dry chamber) for 80-year-old Princess Redwing and the Narragansett Tribal Museum in Rhode Island, and the Exhibits Editors' Office wrote and edited a script for the fiftieth anniversary exhibition of the Federal Prison System.

#### EXHIBITS EDITORS' OFFICE

The Exhibits Editors' Office prepared scripts for all of the twenty-four new SITES exhibitions, provided traditional support to the National Mall museums, and, as in past years, had considerable involvement in editing the Program Book for the Festival of American Folklife. Two exhibitions were edited specially to communicate with a handicapped audience. *Out of Africa*, an exhibition of the Anacostia Neighborhood Museum (ANM), was edited for the hearing-impaired. Considerable coordination with the ANM education office and advice from Gallaudet College were needed to determine the level and style of writing best suited for those who suffer hearing loss. The labels for the National Museum of History and Technology (NMHT) exhibition *In Touch*, describing reading and writing techniques for the blind in the 1800s, were produced in braille. In this case, the label copy was specified for braille "language" and the printed labels were then set in that particular style. The Exhibits Editors' Office also assisted and worked with the Department of Justice, the office of the Architect of the Capitol, and the curator of the Supreme Court this year. The Supreme Court exhibition *Charles Evans Hughes: The Eleventh Chief Justice*, an extensive rewriting and editing project, opened in October 1980 and will remain on view at the Supreme Court for over a year.

#### FREEZE-DRY LABORATORY

The Freeze-Dry Laboratory prepared specimens for NMNH, including a beautiful 20-pound bald eagle, and several specimens for the Zoolab at the National Zoological Park. The lab is lending assistance to outside organizations by preparing two baboons for the Southwest Research Institute for use in research on electric conductivity. OEC anticipates that these specimens will be given to the Smithsonian at the completion of the research project. The manual on *Freeze-Drying Biological Specimens*, written by Rolland Hower and published by the Smithsonian Institution Press last year, has almost sold out the first press run and a second printing is being considered. The book has resulted in a notable increase in correspondence to the Freeze-Dry Laboratory. Students from India, Libya, and Germany have worked in the lab this year and, because Mr. Hower has some skill in signing, a deaf employee from the National Park Service also received training and experience in



osteological preparation and subsequently assisted in preparation and articulation of a 10-foot Pacific crocodile skeleton for NMNH's vertebrate paleontology exhibits.

#### MOTION PICTURE UNIT

The Exhibits Motion Picture Unit also completed the year with an active schedule. For the coming year, two films on the handicapped are planned with the Office of Elementary and Secondary Education and the Office of Telecommunications in conjunction with the International Year of the Disabled. Films for NMNH, the Freer Gallery of Art, and the NMHT are all in planning and scheduling stages, as is documentary coverage of activities for the Office of Folklife Programs. This year, the Motion Picture Unit completed three films in conjunction with the living *Coral Reef* exhibition at NMNH: a nine-minute film for the exhibitions, a three-minute short (for the Office of Public Affairs), and a public-service spot announcement for television. Two films were produced for the NMHT's exhibition *The Clockwork Universe*—an exhibition film and a television spot—plus a television spot for *The Nation's Attic*. A film animated by Film Polski in Warsaw, *Changes: The Story of Evolution and Speciation*, for the Zoo, is in the final production stages. Documentary footage has been shot during the year for the Folklife Programs: British ballad singers in New Brunswick and New York, and old-time medicine show entertainers in Bailey, N.C.; for the NMHT: retrieval of the engine from the 131-year-old ship *Indiana* in Lake Superior, and the first automatic packaging machinery at the Seidlitz Powder factory in Edison, N.Y.; and for the OEC: the fabrication of leaves for life-size dioramas in the shops at 1111 North Capitol Street. Artist Jacob Kainen was videotaped for the National Collection of Fine Arts, and assistance in filming the opening ceremonies was provided for the United States Department of Education.

As in years past, the Exhibits Motion Picture Unit and its staff were recognized by the film industry for its productions. *Thomas A. Edison and His Amazing Invention Factories* received the CINE Golden Eagle Award from the Council on International Non-theatrical Events. *Reunions—Memories of an American Experience*, coproduced with the Office of Telecommunications, was awarded the Chris Plaque at the Columbus Film Festival, and the World

Wildlife Film Festival gave a "Special Recognition Award for Unique Approach to a Wildlife Film" for *The Big Cats and How They Came to Be*. This animated film was also selected for public viewing at the Yorktown International Film Festival.

#### MODELS, PLASTICS, AND RESTORATION UNIT

Aside from preparing to build the flying reptile with its 40-foot wingspan, the MPR staff produced an extremely diverse amount of modelmaking that is unique in the museum profession. An early shrew about 3 inches long (plus tail) was exactingly sculpted and cast for the NMNH series of paleontology exhibits, for which a great many other animal and plant forms are being made. Mannequins were made and costumed in various styles and poses for both NASM and NMHT. Planning and experiments with new materials were carried out preparatory to refurbishing the National Mall directories, and plastics continue to be used to create everything from jellyfish models to coconut shells. For the NMHT exhibition *In Touch*, the MPR staff worked in close collaboration with the Conservation Analytical Laboratory to reproduce the delicate early braille and other relief forms from paper and cardboard originals and thus provide touchable—readable for the blind audience—exhibition objects. This is the first time that this has been successfully and safely done as direct-contact replication.

#### PROJECTS AND RESOURCES

In addition to all these projects, OEC staff assisted several other organizations within the Institution and in the museum community. This assistance occasionally took the form of consultancy only, sometimes involved training, and, in a few instances, was performed personally, on off-duty time. Projects included: installation of the SITES exhibition *Played With Immense Success: Louisiana Music, 1840–1940, A Singing Century* (produced by OEC in fiscal year 1978) in the Kennedy Center for the Performing Arts; preparation of the first exhibit on rare books by the Dibner Library and its installation at the NMNH; preparation and installation for OMP of exhibits for the "Children in Museums" conference at the National Gallery of Art; and assistance on the first exhibition for the opening of the Jewish Museum of Washington, D.C., and on the annual exhibition of the Art Directors Club of Metropolitan Washington.

A large planning model (done in sections) of all the galleries of the Renwick building was also completed.

A *Victorian Horticultural Extravaganza*, an exhibition by the Smithsonian's Office of Horticulture, involved considerable participation by several OEC units over a period of about nine months. The Exhibits Editors' Office worked on the labels and typography. The Models, Plastics, and Restoration Unit produced many varieties of period Wardian cases and other floral accessories and restored several original pieces. The Fabrication Unit's Cabinet Shop and the Finishing Shop did an impressive amount of new construction and restoration of period exhibition cases and backdrops, and assisted the Office of Horticulture staff and volunteers installing the show in the Arts and Industries Building.

Thus, much of what is actually produced by OEC are component parts of the exhibitions, other presentations, and the exhibit-related activities of the Smithsonian Institution chronicled elsewhere in this annual report. Individual projects are what OEC feels it does best. At no time has the entire OEC staff worked on one specific program. Instead, select teams of specialists, occasionally individual staff members, are always active on different jobs, working with different Smithsonian units, thus fulfilling the mission of OEC as a central resource of the Institution.

### *Office of Horticulture*

During 1980, the Office of Horticulture expanded its activities into new research, educational, and exhibition programs. Much of this growth was due to increased private assistance for exhibitions and for acquisition of collections of living plants and decorative art objects relating to the history and evolution of horticulture.

Throughout the year, the office contributed to more than 238 special events which included Regents' dinners, a dinner honoring the king and queen of Belgium, the "Portrait Ball" at the National Portrait Gallery for the National Associate Program contributing members, and major openings of exhibitions in several Smithsonian museums. For such events, the office provided floral arrangements, potted palms and other tropical plants, as well as rare and unusual orchids.



A rolling stone gathers no moss  
Obstacles may be overcome

This reproduction of early "relief" printing for the blind was created by the Conservation Analytical Lab and Exhibits Central for NMHR's *In Touch* exhibition so that visitors could experience *through touching* forerunners to braille type. Below. The parlor gardening display in the *Victorian Horticultural Extravaganza* exhibition at Arts and Industries features a Wardian case and other late nineteenth-century horticultural elements highlighted by the Office of Horticulture.



The Education Division, under the direction of Ms. Lauranne C. Nash, staged the third annual *Trees of Christmas* exhibition at the National Museum of History and Technology from December 14, 1979, to January 2, 1980. All of the ornaments were provided by individuals, volunteer groups, or ethnic organizations. When the exhibition closed, the ornaments were contributed to the Institution. The Education Division also accessioned 2,200 plants and prepared records for approximately 10,000 plants accessioned in previous years. The horticultural book collection expanded by over 250 volumes, most of them relating to mid- to late-nineteenth-century Victorian gardening. In addition, during this last year the interior plant program of the Freer Gallery of Art became the responsibility of the Education Division of the office.

With the cooperation of many other Smithsonian bureaux and units, the Office of Horticulture prepared and opened, on the west balcony of the Arts and Industries Building, an exhibition entitled *A Victorian Horticultural Extravaganza*. The exhibition was designed to highlight all disciplines of nineteenth-century horticulture: floriculture (flowers), ornamental horticulture, olericulture (vegetables), and pomology (fruits); the commerce that grew out of these disciplines; and their relationships to the decorative arts during the period 1836–1906. The exhibition was funded through the generosity of the floral industry of America; approximately \$130,000 in cash donations were received from individuals, floral organizations, and corporations, and a large number of objects of the Victorian period were contributed. Among these were a large collection of Victorian posy-nosegay holders, antique florist supplies, and memorabilia given by Mrs. Frances Jones Poetker of Cincinnati, Ohio; and a wire floral frame collection given by the descendants of Henry Weber, grower-florist, of Oakland, Maryland. The opening of the exhibition on July 22, 1980, was scheduled to coincide with the annual meetings, held in Washington, of the American Institute of Floral Designers and the Society of American Florists. Members of these organizations created special floral arrangements and contributed thousands of fresh flowers for the occasion.

The orchid collection grew substantially in quantity and quality in 1980. In November 1979, Mrs. Beverly Pabst of Hillsborough, California, donated the renowned orchid collection of her late



husband, Mr. Rudolph Pabst. This remarkable and rare collection of over 1,500 members of the Orchidaceae family, especially of the red-orange hybrid Cattleyas, added an entirely new dimension to the display and hybridization collection. Also in November 1979, a field expedition team consisting of Mr. James R. Buckler, Mr. Paul E. Desautels, Dr. Robert Read, and Smithsonian photographer Mr. Jeffrey Ploskonka, collected more than six hundred orchids and one hundred bromeliads in Panama to add to the Smithsonian collection. These orchids are housed and maintained at the Greenhouse-Nursery Division under the direction of Mr. August A. Dietz IV at the United States Soldiers' and Airmen's Home. The orchid collection, along with the bromeliad and miscellaneous tropical plant collections, is used for exhibitions and as a source of future hybridization and plant exchange programs with botanical gardens and private collectors.

During the year, the office presented three exhibits at Washington area plant and flower shows, including Florafest I which took place on March 14–16, 1980, at the United States Botanical Garden; the Fall Flower and Garden Show sponsored by the Falls Church Garden Club on September 20–21; and the Eastern Orchid Congress held on September 26–28, 1980. The design, installation, and maintenance of these exhibits were under the direction of Mr. John W. Monday, assistant director of the office, and Mrs. Kathryn Meehan, exhibits design specialist.

A ten-year lease was negotiated with United States Soldiers' and Airmen's Home to allow for future development of new areas for greenhouses, cold frames, lath house structures, and for new research and office space. One of the buildings at the Home, known as House #8, will provide year-round conditions for housing the expanded orchid collection. The Greenhouse-Nursery Division which operates this facility was responsible for the production of over 125,000 annual bedding plants; 12,000 cut flowers; and approximately 9,000 seasonal plants such as poinsettias, chrysanthemums, and Easter lilies. The division also maintained several thousand tropical plants used in special events and exhibitions, and produced and maintained approximately 16,000 orchids and 600 bromeliads. These collections will provide the plants to be rotated in the *Victorian Horticultural Extravaganza* exhibition in the Arts and Industries Building. Volunteers contributed more than 1,640



hours of effort to assist with the care of these collections at the Greenhouse-Nursery Complex.

The Grounds Management Division, under the direction of Mr. Kenneth Hawkins, installed 120,000 annuals, 110,000 spring flowering bulbs, 20,000 pansies, and more than 600 ornamental cabbage and kale plants for flower beds on Smithsonian grounds. Special projects included installation of the Smithsonian sunburst logo in front of the Joseph Henry statue on the National Mall; moving of two 40-foot weeping beeches; planting of 500 English yews and 4 Ginko trees as part of the renovation of the Hirshhorn Museum and Sculpture Garden; planting of flowers and instituting of a grounds maintenance program for the Museum of African Art; and development of a new embroidery parterre for the Victorian Garden. Also in 1980, the Grounds Management Division assumed responsibility for all exterior trash removal for Smithsonian museums on the National Mall.

The garden furnishings collection was expanded this past year through the selective acquisition of fine pieces representative of various forms and styles of furnishings used in gardens during the last half of the nineteenth century. Many of these objects are being shown in the *Victorian Horticultural Extravaganza* exhibition. Pieces acquired included eleven urns, six settees, cast iron cemetery bouquet holders, plant stands, iron chairs, a cast iron table, a wire hanging shelf, and a pair of fine wrought-iron gates. Of special interest in this group are the folding wire plant stand and two oak leaf and acorn cast iron settees by James Beebe of New York; and a swan-style settee and an urn and pedestal by J. McLean, also of New York.

In 1980, the Office of Horticulture was involved in planning several new projects and contributed to development of a number of long-term programs. In cooperation with the Cooper-Hewitt Museum, final planning was begun for an exhibition, *Horticulture and the Decorative Arts*, to be opened in New York City in July 1981. Private support from floral organizations is being sought to assist with this three-month exhibition and the renovation of the Cooper-Hewitt Conservatory. The office contributed to the development of plans for the Sensory Garden to be located in the area between the Arts and Industries Building and the Hirshhorn Museum; this project is scheduled for completion in the spring of 1981. In addi-

tion, the office began to produce plants for the Museum Support Center grounds and has worked with the landscape architectural firm of Sasaki Associates on the development of plans for the South Quadrangle grounds.

This year was a particularly active one for Mr. James R. Buckler, director of the office, who presented lectures throughout the country, many for the National Associate Program, others for private and scholarly organizations having an interest in horticultural developments. In addition, Mr. Buckler continued to publish his monthly column "Flora Smithiantha" in the *Smithsonian Torch*.

The Office of Horticulture benefited immeasurably during 1980 from the help given to its programs by informed, hard-working, and dedicated volunteers; many of these programs could not have taken place without this generous help.

### *Office of International Activities*

The objects of cultural history and the specimens of natural history preserved in Smithsonian museums, as well as the professional people who study and exhibit them, are employed in a global research and educational process. The Office of International Activities contributes to this process by fostering international dimensions of Smithsonian programs. It does so by advising program managers and by maintaining liaison with the United States and foreign governments, with private institutions around the world, and with international organizations.

The efforts of the past ten years to restore scholarly exchanges with China met with singular success in 1980. Smithsonian interest in China was evident as long ago as 1862 when *Smithsonian Contributions to Knowledge* included a series of monographs entitled "Geological Researches in China, Mongolia, and Japan," by Raphael Rumpelly. This interest is embodied in collections of the Freer Gallery of Art which since 1906 has distinguished itself as an American center for the study of the art history of China. World War II and civil war in China interrupted Smithsonian exchanges with that country until 1971. That year the Smithsonian International Exchange Service resumed shipping American

scholarly publications to many Chinese institutions. In 1972, the National Zoo proposed and managed the exchange of breeding pairs of musk oxen and giant pandas as gifts marking President Richard M. Nixon's historic visit to the People's Republic. On that occasion, Dr. Theodore Reed, director of the Zoo, visited Beijing. Subsequent visits by Smithsonian personnel contributed to growing communications and the exchange of specimens. Visits of note were made by Freer Gallery of Art director, Thomas Lawton, and its head conservator, William T. Chase III, as part of the first American delegation of archeologists in 1973; by Secretary Ripley and Edward Solomon Ayensu, curator of botany, in 1975; and by Smithsonian-sponsored groups of American zoo directors and of the National Associate Program's board in 1978.

Chinese delegations visited the United States in growing numbers following President Nixon's visit to China in 1972. Many visited the Smithsonian and the Office of International Activities contributed to arrangements for those with shared professional interests, including librarians, laser experts, astronomers, higher education and science and technology administrators, botanists, and paleobiologists. In 1980 alone, Chinese groups receiving Office of International Activities assistance numbered eighteen, totaling 191 Chinese individuals.

The most significant development in 1980 was the travel of a Smithsonian delegation to China at the invitation of the Scientific and Technical Association of the People's Republic of China. The invitation proposed discussion of exchanges in biology, archeology, and museum management. The delegation of twelve scholars was led by Paul N. Perrot, Assistant Secretary for Museum Programs. It represented the interests of the Smithsonian in China and included members from the Freer Gallery of Art, the National Portrait Gallery, the Conservation Analytical Laboratory, the Chesapeake Bay Center for Environmental Studies, the National Museum of Natural History, the National Zoological Park, and the Smithsonian Tropical Research Institute in Panama. Vice-Premier Fang Yi, the responsible person for science and technology in China, welcomed the delegation and its proposals for collaboration. Delegation members discussed research objectives with Chinese colleagues, examined research collections in natural and cultural history, and lectured to scholarly groups in museums and research



institutes in Beijing, Datong, Qingdao, Xian, Nanjing, Shanghai, Kunming, and Guangzhou. The entire visit to China was characterized by the warmest hospitality and by professional candor. Secretary Ripley invited the Scientific and Technical Association to send a return delegation to the Institution, now expected to come in 1981.

As a consequence of the Smithsonian delegation's visit to China, Secretary Ripley sent to Vice-Premier Fang in April 1980 a Smithsonian proposal suggesting collaboration with many of the Chinese institutes and scholars visited by the delegation.

Secretary Ripley subsequently visited China in May and June 1980 to take part in the Academia Sinica Symposium on the Qinghai-Xizang (Tibet) Plateau and in a survey of the Plateau. While in Beijing, he met with Vice-Premier Fang who suggested on the basis of the April 1980 Smithsonian proposal that the Institution and the Chinese Academia Sinica explore establishment of formal ties. To this end, a draft agreement between the Smithsonian Institution and the Academia Sinica was sent in July to the Vice-Premier and to the Secretary General of the Academia Sinica, Mr. Yu Wen.

Traditional Smithsonian exchanges with Cuba, started in 1849 when volume 1 of *Smithsonian Contributions to Knowledge* was mailed to the *Real Sociedad Economica* in Havana, were restored in 1980 after a nineteen-year lapse. The Smithsonian and the Cuban Academy of Sciences agreed on procedures for the exchange of scholars.

Fostering other Smithsonian programs abroad, the office supported 122 projects, providing logistical and facilitative support through correspondence with the United States diplomatic missions abroad and with foreign governments and their embassies in Washington. In addition, 35 programs abroad of other institutions which involve the Smithsonian received assistance. Forty foreign-exchange visitors and students took part in Smithsonian research and related programs, and 25 other foreign participants in Institution activities received assistance on administrative and visa matters. The office also continued to process passport and visa applications for the duty travel abroad of Smithsonian staff and Smithsonian-sponsored scholars.

Including the Chinese visitors to the Smithsonian in 1980 men-

tioned above, the office arranged 103 programs involving 453 foreign visitors with interests in the museums and laboratories of the Institution.

### *Office of Museum Programs*

The Office of Museum Programs organizes and conducts several distinct but interrelated activities and services for the professional enhancement of museum personnel and for the improvement of museum operations. Its training activities include presenting a series of workshops and seminars, planning internships, and making arrangements for professional visits, particularly for foreign museum personnel. A special part of this activity concentrates on providing training and advisory services for Native American museums. The office produces and distributes informational audiovisual presentations on conservation principles, undertakes studies to evaluate museum exhibits and educational programs, maintains a museum reference center consisting of books, periodicals, research papers, and documents on museums, and offers counseling services on museum careers, training, and practices.

#### *WORKSHOPS AND INTERNSHIPS*

In 1980, the office continued its series of three- to five-day workshops to provide training opportunities for museum professionals in the United States and abroad. During the year, 618 persons attended the thirty workshops that were offered. Those participating represented all types and disciplines of museums, and came from a broad geographic distribution that included most states in the continental United States as well as Alaska and Hawaii. Museum professionals from Canada, Sweden, Peru, India, and Italy also attended. Workshops dealt with exhibit preparation, grants, conservation and preventive care for collections, museum insurance and loan agreements, computerization, museum archives, lighting, museum membership programs, freeze-dry techniques, evaluation studies, public information and publications programs, and fundamentals of museum management. The office also offered a short series of workshops for Smithsonian staff members; topics in-

cluded museum lighting, label writing and editing, and information management and automation.

As an extension of the Smithsonian-based series, Nancy Welch, training coordinator, organized six cosponsored workshops in other parts of the country. Five of these were presented in cooperation with the Southern Arts Federation and one with the National Park Service. The cosponsors paid all costs involved. These out-of-town programs provided professional training experiences to more than one hundred individuals from member museums of the federation and from the exhibits staff of the National Park Service. This was the second year of successful cooperation with these organizations, and it is likely that the arrangement may be expanded in the future to include interested groups in other parts of the country.

Over the last six years, the internship program has offered opportunities for specialized museum training to some five hundred persons. Interns come to the Smithsonian from undergraduate and graduate programs, from other museums, and as representatives of foreign governments. During 1980, the office placed forty-two individuals in internship positions throughout the Smithsonian. In addition to those from the United States, internships were arranged for persons from Kuwait, Nigeria, India, Germany, England, Peru, Zambia, Turkey, and Sweden. Internships do not carry credit or provide financial support; the period of training may last from two months to two years, but the average program runs for about six months. As with the workshops, focus of the internships is on museum practices; intern assignments may involve assisting with educational programming, exhibit or collections research, cataloguing, or design and exhibit production activities. Long-term interns, especially those from foreign countries, often elect to travel as part of their program; in such cases, the office prepares special itineraries for them to assure that visits are made to museums that are able to respond to their interests.

In 1980, forty-two persons were served through the visiting professional program; participants came from the United States, Mozambique, France, India, Italy, Australia, the Netherlands, Argentina, and Canada. This program is designed to serve individuals who are able to remain at the Smithsonian for less than a month, are interested in research and training activities here, and wish to establish professional contacts.



#### NATIVE AMERICAN MUSEUM PROGRAMS

The Native American Training Program enjoyed remarkable success in 1980. Of great significance was the establishment of a contract between the Smithsonian and the Department of Labor to support the internships, workshops, and technical assistance being offered to Native American museum personnel.

This year, the Smithsonian Institution and the North American Indian Museums Association conducted four workshops which reached ninety-two participants. These workshops were held at Phoenix, Arizona; Cody, Wyoming; Seattle, Washington; and Anchorage, Alaska. Since the training program began, nine workshops have been presented, attended by more than three hundred Native Americans. In addition, this year thirty-three Native American museum employees were placed as interns at the Smithsonian, the Museum of New Mexico, the New York State Museum, the Makah Cultural and Research Center, the Cherokee Nation Indian Museum, and at other notable institutions. The Native American community is also being served through a conservator based in the Conservation Laboratory of the Department of Anthropology of the National Museum of Natural History. The conservator, who works closely with James A. Hanson, the Native American training coordinator, provides needed information, technical assistance, and conservation services for selected collection items from tribal and other museums. Further attention to collections was provided by Mr. Hanson who conducted on-site evaluations and offered technical assistance at twenty-five Native American museums.

There have been other forms of assistance: the Conservation Information Program of the Office of Museum Programs helped, for example, to produce the videotape *Sacred Objects: A Native American Perspective*, which is being used by the North American Indian Museums Association as an educational tool to inform the museum community at large about this sensitive and timely issue. The program coordinator has also devoted much time to advising various Smithsonian personnel on important subjects that relate to current Native American matters.

#### AUDIOVISUAL LOAN PROGRAM

Audiovisual presentations have proved to be one of the most effective ways of conveying information on basic principles of con-

servation, and of creating an awareness of the need for caution and care in the application of these principles to museum collections. The Conservation Information Program has prepared and distributes a library of eighty-three videotapes and twelve slide-cassette shows which deal with the theory and practice of conservation and, in 1980, has continued to produce and plan further productions on this vital subject. A new videotape entitled *Conservation of Gilded Wooden Objects* is being produced in cooperation with the National Collection of Fine Arts. During the year, moreover, students from American University who were enrolled in a work-study program with the Office of Museum Programs prepared five scripts now ready for production. These include three slide shows dealing with *The Care of Japanese Paintings on Silken Paper*, *The Examination and Handling of Paintings on Canvas and Wood Panels*, *Recognized Conservation Problems of Ethnographic Objects*, and two videotapes, *Handling Furniture* and *The Examination of Paper Objects*. Plans are being developed for remaking several of the basic conservation lectures given by Robert Organ, director of the Conservation Analytical Laboratory. These videotape lectures, which are presented periodically at the Smithsonian, are also widely distributed to museums in the United States and abroad. They will serve as part of the instructional program for the training of conservators at the Museum Support Center.

The Conservation Information Program, which is supervised by Mrs. Elena Borowski, has recently expanded its efforts to develop audiovisual programs on museum education, and has cooperated with several other Smithsonian bureaux in the preparation of videotapes which record special subjects and events. Three of these, produced by the Smithsonian Office of Folklife Programs, describe children's games from African, British, and Chinese traditions. Another provides complete videotape coverage of the matting of the giant pandas at the National Zoological Park. The program *Sacred Objects: A Native American Perspective*, dealing with Native American artifacts and their use and exhibition in museums, is being used widely. These cooperative efforts have been made possible by the acquisition of improved videotape equipment that permits mobility in the recording of such programs.

During 1980, 188 slide shows and 856 videotapes were requested by and loaned to 57 institutions; in addition, 25 slide shows and 1 videotape were sold. The current mailing list of the Conservation Information Program includes some 15,000 museums, organizations, and individuals.

Other programs begun in 1980 include preliminary production of the videotape *Museum Careers*, which will be released in 1981; preparation of a videoscript about the Discovery Corner of the National Museum of History and Technology; and distribution of slide-cassette programs produced by the Advisory Council on Historic Preservation on the subjects of *Preservation and Energy Conservation* and *Conservation and Urban Revitalization*. In September, Mrs. Borowski participated in a special meeting held at the International Centre for Conservation in Rome which dealt with the application of audiovisual techniques to conservation training.

#### MUSEUM EVALUATION STUDIES

To make museum exhibitions and educational programs more effective and useful for the visiting public, the Museum Evaluation Studies Program (formerly the Psychological Studies Program) examines the perception and opinions of visitors—and from these develops recommendations for future programmatic development and exhibit planning and design. This work has been performed by Dr. Robert Wolf, consulting psychologist, of the University of Indiana, Bloomington. During the year, two evaluation studies were completed at the Hirshhorn Museum and Sculpture Garden. One examined an educational outreach program for gifted and talented elementary school children, and the other investigated reactions of visitors to their museum visit experience. A formative evaluation study of the *Coral Reef* exhibition was completed at the National Museum of Natural History. This study is unique because it occurred while the exhibition was being developed and its findings had the effect of allowing visitors to participate in development of the exhibition. At the same museum, an evaluation study was begun of the Hall of Evolution; another was started at the Renwick Gallery to examine the program for a pan-Smithsonian exhibition currently under development.



## MUSEUM REFERENCE CENTER

The Museum Reference Center, a unit of the Smithsonian Institution Libraries located in the Office of Museum Programs, is both a library and a resource center with collections of bibliographic and documentary materials on the history, philosophy, and operation of museums, as well as on legislation, conferences, and other developments affecting museums. The center remains the only location in the United States with information specifically assembled and collected on a systematic basis for use by the museum profession. In 1980, collections of the Museum Reference Center grew substantially. In addition to the normal acquisition of materials, large quantities of new materials were received as a result of increased awareness within the museum profession of the existence of the center. Further, materials received in 1979 from the Center for Museum Education were integrated into the collections. Some additional space was also provided to accommodate this growth. To assist new visitors to the Museum Reference Center, an orientation package titled *Now That You're Here* was compiled. The materials in the packet include a floor plan, a list of recent acquisitions, publication lists, including information on audiovisual resources for museums, and a description of the services offered.

The center has received visits from large and small groups having a special interest in this type of information center. During the last year these have included the participants of the American Indian Library Cultural Centers project; librarians and information specialists from Guam; interns from the Historical Society of York County, Pennsylvania; and small groups from the Museum Studies Program of George Washington University. As a result of correspondence from a scientist in Nanking, People's Republic of China, the center is receiving Chinese-language publications in exchange for photocopies of museology articles and books donated by United States publishers. The February 1980 issue of *History News*, published by the American Association for State and Local History, contained an article "Light under a Bushel," by Paula Degen; it describes the activities and resources of the center, and produced a large and appreciative response. The center was also profiled in the fall 1979 issue of the *MAHD Bulletin* (Museums, Arts, and Humanities Division of the Special Libraries Association).

The center now offers a total of forty-three bibliographies on museum subjects, two of them developed during the past year. One of these, *Children in Museums*, was produced for the international symposium sponsored by the Office of Museum Programs in October 1979. The center also contributed to the forthcoming *Union List of Art Periodicals and Serials in Research Libraries in the Washington, D.C., Metropolitan Area*.

During the year, plans moved forward toward the development of a computer data base to be produced cooperatively with the National Museums of Canada. Mrs. Rhoda Ratner, librarian of the Museum Reference Center, conducted a session on museum libraries at the annual meeting of the American Association of Museums. The proceedings of that session, which are to be published, will be of great interest to the profession. The librarian is also a member of the committee to complete the English portion of the *Dictionarium Museologicum* being produced by the terminology working group of the Institute of Conservation and Methodology of Museums, Budapest, in cooperation with the Documentation Committee of the International Council of Museums.

#### OTHER ACTIVITIES

More than one hundred people this past year availed themselves of the career counseling which the Office of Museum Programs offers to persons interested in entering the museum field or to those seeking to enhance their careers. An equal number received information and advice on a variety of museum practices and management methods, as well as on the organizational structures of museums. These individuals come from many countries around the world as well as from the United States.

Staff members are also active in regional, national, and international museum activities. In late 1979, the office organized and conducted the major international symposium *Children in Museums*, as part of the observance of the International Year of the Child. The symposium dealt with issues, such as curiosity, learning to see, participatory experiences, intercultural relationships, perception, and the future of museums. In addition, the office organized and conducted a meeting on mid-career museum training to establish standards and criteria for training programs to enable presently employed museum personnel to become better in-

formed of new technologies and management systems that are rapidly being adopted by museums.

### *Office of the Registrar*

For some time a need has been felt for more comprehensive documentation of policies on the management of the Smithsonian's collections. Acting on a recommendation made during the study on collections policies and management, the Office of the Registrar recently developed a plan and formulated an institutional policy designed to fill this need. The new policy, which was issued by the Institution this year, requires each collecting bureau to draft a policy document addressing nine basic topics in a given sequence but allows the bureaux freedom in tailoring policy statements to accommodate their individual circumstances. Guidelines for the formulation of museum collections policies were developed by a task force of the Collections Policy and Management Committee and distributed with the Institution's master policy. As the year drew to a close, drafts of the bureaux' policy documents were being processed for approval. Each bureau policy, when approved, will become part of the Institution's over-all policy on collections management.

Meanwhile, the office continued to pursue its ongoing activities related to the information management aspects of collections management. The workshops on registration methods and on computerization for museum collections have become regular features, with both Smithsonian and non-Smithsonian personnel participating in them. The Registrarial Council continues to function as a medium for cooperation among the Institution's registrars and for the exchange of information on matters of professional interest. The task forces working under the Collections Policy and Management Committee continue to pursue various projects, some of them based on findings in the original study and others initiated since then. In addition to managing the logistics of these task forces, the office monitors progress in the collection inventories of the various bureaux and provides periodic status reports for use by management.





A panel of children, these from Washington, shared their impressions of museums as part of the international symposium on *Children in Museums* organized by the Office of Museum Programs. *Below.* Rhoda Ratner, the librarian at OMP's Museum Reference Center, pulls a file from the subject collection. This major file, twice as large as the book collection, is of paramount value to museology researchers since it includes materials not available in published form: typescripts, theses, program papers, checklists, gallery notes and brochures, newspaper clippings, museum policy guides. (Photos by Eleanor Crow.)



## Smithsonian Institution Archives

During 1980, selection and preservation of archives continued in the National Museum of Natural History, the National Museum of History and Technology, and the National Collection of Fine Arts. An archives program was established for the Cooper-Hewitt Museum, and work began on an archival program for the Smithsonian Astrophysical Observatory. Disposition of records continued under established schedules, with progress in the Smithsonian Credit Union, the Accounting Division, the Office of Protection Services, and the Office of Personnel Administration.

Three student interns spent varying amounts of time in the Archives. A graduate student from Georgia Southern College spent several months in the Archives doing research for her master's thesis on the Theodore Roosevelt/Smithsonian African expedition of 1909–1910; a library science student from the University of Maryland spent time in the Archives studying the theory and practice of archival administration; and a deaf student from Gallaudet College completed a work-study program designed to prepare him for a career in archives administration.

Scholars continued to visit the Archives during the past year. Several recent publications have appeared, based at least in part on material in the Archives. Among them are: Nathan Reingold, ed., *The Papers of Joseph Henry: January 1836–December 1837, The Princeton Year* (Washington, D.C., Smithsonian Institution Press, 1979); Charles Coleman Sellers, *Mr. Peale's Museum: Charles Willson Peale and the First Popular Museum of Natural Science and Art* (New York: W. W. Norton, 1980); William H. Truettner, *The Natural Man Observed: A Study of Catlin's Indian Gallery* (Washington, D. C.: Smithsonian Institution Press, 1979); Richard E. Blackwelder, *The Zest for Life, or Waldo Had a Pretty Good Run: The Life of Waldo LaSalle Schmitt* (Lawrence: The Allen Press, 1979); and Rexmond C. Cochrane, *The National Academy of Sciences: The First Hundred Years, 1863–1963* (Washington, D.C.: National Academy of Sciences, 1978).

Work in progress includes an edition of the letters and diaries of George M. Dawson of the Geological Survey of Canada, a history of the Ethnogeographic Board, a history of the development of the Santa Barbara channel, and a history of the United States Army in



California. Other projects include a history of the National Zoological Park, a history of whaling, and a history of nineteenth-century ornithology, as well as biographical studies of Theodore Roosevelt, Elliott Coues, Fielding B. Meek, James Graham Cooper, P. T. Barnum, and Lorin Blodget.

Material from the Archives was included in two recent exhibitions: *Who Built Alexandria? Architects in Alexandria, 1750–1900*, held at Carlyle House in Alexandria, Virginia, October 6–December 2, 1979, and *The Metalwork of Albert Paley*, held at the John Michael Kohler Arts Center in Sheboygan, Wisconsin, April 13–June 1, 1980.

Major accessions were received from the Office of the Secretary, the Assistant Secretary for Science, the Smithsonian Institution Libraries, the Smithsonian Institution Traveling Exhibition Service, the National Museum of History and Technology, the National Museum of Natural History, the Cooper-Hewitt Museum, the Division of Performing Arts, and the Smithsonian Astrophysical Observatory. Other accessions of note included the papers of Archie F. Wilson, Floyd A. McClure, Paul Conger, Edward R. Warren, and Kjell Sandved, as well as additions to the papers of S. Dillon Ripley, Spencer F. Baird, Watson Perrygo, and Alexander Wetmore.

The Archives Oral History Program continued emphasis on the history of the United States National Museum and Smithsonian administrative history. Accessions included a series of interviews with Watson M. Perrygo, field collector and taxidermist for the United States National Museum. Materials prepared for research use during 1980 include interviews with James C. Bradley, retired Under Secretary.

In 1980 the Smithsonian Archives, the National Anthropological Archives, and the Archives of American Art conducted a workshop for museum archivists. The workshop, sponsored by the Office of Museum Programs, attracted eleven participants—from locations throughout the United States—who were provided the information necessary to establish an archival program in their respective museums. It is anticipated that the workshop will become an annual event.



## *Smithsonian Institution Libraries*

The Smithsonian Institution Libraries system (SIL) in 1980 continued its programs of support to Smithsonian research as well as museum and administrative bureaux. Further, the Libraries by participation in the building of the national bibliographic networks, and by exhibitions, loans, and information services has been of direct service to national audiences.

Nineteen hundred eighty was also marked by a self-examination of strengths and by planning for the decade. This focusing was occasioned, first, by the appointment of a new director and, second, by the recognition that the electronic technologies employed in the United States are now of such sophistication, quality, and availability that the 1980s will be a time of profound change in information transfer—and that research libraries will be tied together and cooperate in resource sharing in ways not before envisioned.

While the Smithsonian Institution Libraries is a system embracing only 80 percent of the Smithsonian's library-type activities and none of the other Smithsonian information programs, it is nevertheless recognized as a major academic and research facility available not only for the internal use of Smithsonian staff, but for all serious persons. Since the staff and thirty-five collections of the system are dispersed in and around Washington, as well as in four other cities of the United States and in the Republic of Panama, the size and scope of SIL services is sometimes overlooked. Thus, review and assessment of the SIL system was pushed forward in 1980 to achieve clearer understandings.

### *AUTOMATION*

In 1965, the Libraries inaugurated one of the first automated book and journal ordering systems in North America. In 1974, cataloguing began cooperatively via an on-line national computer network. In 1978, computer-assisted reference work in arts, sciences, and humanities data banks and interlibrary loans were pursued by a national electronic network. In short, a subtle but profound shift in the ways the Libraries does business has occurred. In 1980 this movement of automation intensified.

A full year of on-line reference service was observed in July with more staff now trained to use the new electronic reference

"books," with the expansion of the number of data bases subscribed to, and with the addition of terminals at the SIL branches in the National Zoological Park and in the National Museum of History and Technology. In this same year, thanks in major part to a grant from the Atherton Seidell Fund, telefacsimile transmission was begun by the system's Central Information Services in Washington with Smithsonian and other research libraries possessing such technology. This has resulted in more rapid sending and procurement of print information, especially of periodical articles.

Further, planning was completed and contracts let for SIL catalogue production directly from computer to microfiche. The first edition of the computer output microfiche (COM) catalogue will appear early in 1981, being supplemented weekly and cumulated quarterly. Thus, the Libraries' entire catalogue will be readily available at multiple locations both within the Smithsonian and outside, and the costly manual maintenance of many card catalogues avoided. The COM catalogue is slated to give way to an on-line catalogue well before the end of the decade. Training was given to equip staff better for the new national standards (*Anglo-American Cataloguing Rules*, 2d ed.), important in construction of these electronic indexes.

#### COLLECTIONS

Despite past decisions of the Institution to transfer large and important collections to the Library of Congress, the Smithsonian Institution Libraries is today responsible for a million-volume collection. Over the last decade the Libraries' administration realized that collections do not merely exist; they need help. Thus, in 1974 a special division was set up to handle vast backlogs of uncatalogued or incompletely catalogued materials; this unit will continue efforts to inventory and register collections at the same time that these and other older records are put into machine-readable format. The project is called retrospective conversion and was planned in 1980.

Another sign of concern for the collections was shown in 1976 when the Libraries' Book Conservation Laboratory was founded. This high-state-of-the-art restoration facility added two conservators in 1980 and continued to serve the nation by the preservation of the important SIL collections and by sponsoring tours, workshops, and internships.

In 1980, the care of especially valuable items in the Libraries' collections was stressed through the organization of a Special Collections Branch. While the Smithsonian Institution Libraries does not collect rare materials per se, it does conserve, exhibit, and otherwise make available treasures that support the purposes of Smithsonian research interests. The presence of qualified librarians and three properly secured and atmospherically stable facilities made possible such events as the 1980 exhibition *Heralds of Science*, drawn from the gift of Dr. Bern Dibner and marking the twenty-fifth anniversary of his work on the landmarks of the history of science. This same Special Collections Branch sponsored a smaller exhibit in the National Museum of Natural History highlighting the history of museum collecting.

The most important gift of 1980 is Mr. John H. Phipps's distinguished ornithological library consisting of all the major works of John Gould, many works of Daniel Giraud Elliot, and other significant titles. The SIL's collection of Goulds and Elliots is now virtually complete. Among the works new to the SIL, Gould's *The Birds of Australia*, *The Birds of Asia*, and *The Birds of New Guinea* are perhaps the most important. An exhibition is planned for September 1981.

Administratively the problems of selection and deacquisition, conservation, space planning, and collections management policies for this large library system were addressed by designating in late 1980 a new position, namely, Chief, Collections Management. Formerly this was one of the duties of the Assistant Director for Reader Services, but with the growth of the collections, the increase in the number of branches served, the expanded range of reader services, and the rate of deterioration in collections, one person can no longer carry the burden alone. Nevertheless, in 1980 a collection development policy was edited, recording present practice in book and journal selection. This will be fine-tuned over the future.

The Smithsonian Institution Libraries' collections are dispersed geographically in branches where they are most apt to serve readers. Three new branches were added to the system in 1980, one in the Museum of African Art, one in the Office of Horticulture, and one being organized for the new Museum Support Center. The local branches are staffed by librarians, frequently subject specialists,





The Smithsonian Libraries system has intensified its shift to automation with increased participation in the computer-assisted national electronic network: a terminal in use at the NASM Branch Library. *Below.* Dr. Bern Dibner (*center*), donor of the distinguished Dibner Library of the History of Science and Technology, talks with NMHT's Dr. Robert Multhauf (*left*), Mrs. Multhauf, and Dr. Robert Maloy, Smithsonian Institution Libraries newly appointed director.



whose chief duties are to assist directly their museum and research colleagues, as well as other scholars, and to prepare bibliographies. Back-up support in reference, indexing, acquisitions, and administration is supplied centrally by the Libraries' system.

Thus, for example, in 1980 all cataloguing activities for the Smithsonian Tropical Research Institute in Panama and the Smithsonian Astrophysical Observatory in Cambridge were assumed centrally. Likewise a management analysis was made of the National Museum of History and Technology Branch and extra personnel and cataloguing forces were detailed to the Cooper-Hewitt Museum Branch in New York City, permitting that library to become fully operational. Central strategic assistance also went into development of plans for library facilities for the Smithsonian Tropical Research Institute in Panama, the Silver Hill Museum Support Center, the Chesapeake Bay Center, the proposed Quadrangle complex, as well as renovation in the east corridor of the Natural History Building for central library operations. This planning activity is critical, because the Smithsonian Institution Libraries as a large national academic research resource has desperate space needs.

The Smithsonian Institution Libraries as the largest system serving a museum and research complex has been aware of its national and international responsibilities, and staff members are increasingly prominent in professional associations.

### *Smithsonian Institution Traveling Exhibition Service*

Close cooperation with major American and international organizations was the hallmark of the Smithsonian Institution Traveling Exhibition Service (SITES) 1980 exhibition program. *Ice Age Art* was organized with the American Museum of Natural History (New York City) as the first comprehensive exhibition of European Upper Paleolithic art to be produced in the United States. SITES published a children's book, *On the Rocks: The Story of Prehistoric Art*, as an educational supplement to the show. *From All Walks of Life: Paintings of the Figure from the National Academy of Design* was made possible with SITES involvement. Foreign negotiations culminated in 1980 openings for two major porcelain collections: *Sèvres Por-*



*celain* and *Berlin Porcelain* from their respective national manufacturers; SITES published a major catalogue for each exhibition. Another important foreign exhibition was *Jacob Jordaens: Drawings and Prints*, jointly organized by SITES and the city of Antwerp. SITES published a special study guide, *Jacob Jordaens: A Baroque Master*, to complement the exhibition.

A total of twenty-nine new exhibitions, including those already mentioned, began their tours in 1980. Of these, more than one-third were photography exhibitions, covering the widest possible range of the use of the medium, from fine art with *Invisible Light* and *The Photographer's Hand* to science with *Jupiter and Its Moons* and *Aquaculture: A World View of Seafarming* to history with *Western Views and Eastern Visions* and *Photographs from the Collection of the National Portrait Gallery, Smithsonian Institution*.

At SITES in 1980, the emphasis on exhibition interpretation and education increased to the point where every one of the twenty-nine new exhibitions was supplemented by at least one interpretive tool: children's book, catalogue, performing arts, or activity suggestions. The most unusual materials produced were a packet of activity cards on Victorian architecture entitled "Carpenter's Lace," to accompany the exhibition *A Gift to the Street* and a coloring poster for *Flying Fantasies: Butterflies and Moths*, entitled "Butterflies Colorwise," to be cut out and made into a mobile. SITES was supported in these efforts by the Smithsonian Educational Outreach fund.

The publication program produced a mail-order catalogue to promote SITES posters, catalogues, kits, and games to individual buyers as well as to other museum stores. A package stuffer was also produced, in cooperation with the Smithsonian's Mail Order Division, to notify gift buyers of the availability of SITES publications.

SITES produced television public service advertisements to accompany three exhibitions this year: *Ice Age Art*, *Edison and the Electrical Age: 100 Years*, and *From All Walks of Life*. Recent publicity on SITES exhibitions included articles in the *New York Times*, the magazines *Antiques*, *Art News*, *Reader's Digest*, and *Museum*. SITES began to publicize catalogues and educational materials separately from exhibitions. In the first six months of 1980, twenty-five newspapers carried articles on SITES publications, reaching a readership of 833,458.





The Smithsonian Archives recently received the papers of Alexander Wetmore, revered Secretary of the Institution 1944–52. Wetmore (*rt.*) and Eric Schlemmer are seen here returning from a field trip on Laysan, Hawaiian Islands, May 1923.

SITES staff travel increased with the growth of the International Program. Among foreign countries visited were: Egypt, Ireland, West Germany, Ecuador, the Dominican Republic, France, and England. In the United States, staff members traveled to inspect and negotiate exhibitions and also to give lectures and workshops on aspects of traveling exhibitions to the professional museum community. For the first time, SITES presented a specialized panel discussion at the annual meeting of the American Association of Museums.

SITES entered the computer age in 1980 with the introduction of two computer terminals. Although the computer will not be fully functional until 1981, much of the preliminary program design and even partial implementation was completed this year. SITES will utilize the computer for registrarial and administrative functions to benefit from its potential for easing clerical chores while at the same time providing in-depth interpretive information about how the exhibitions are used.

Culminating the year's activities was the appointment of a new director for SITES, Peggy A. Loar, formerly assistant director for programs and policy for the Institute of Museum Services. She intends to strengthen the SITES program in this country and extend its offerings abroad.

*Tours for period October 1, 1979, through September 30, 1980*

Number of bookings .....	820
Number of states served (including Washington, D.C.) .....	49
Estimated audience .....	4–5 million
Exhibitions listed in last <i>Update</i> (catalogue of <i>SITES</i> exhibitions) .....	110
Exhibitions produced for tour during the year .....	29

*Exhibitions beginning tours October 1, 1979, through September 30, 1980*

- Albert Einstein Photographed by Lotte Jacobi
- Aquaculture: A World View of Seafarming
- Berlin Porcelain
- Buildings Reborn: New Uses, Old Places (2d version)
- Children’s Art from the People’s Republic of China
- Contemporary Czechoslovakian Printmakers
- Cut On Wood
- Dance Masks of Mexico
- Designs of the Ndebele
- The Farallon Islands: A Conservation Success Story
- Flying Fantasies: Butterflies and Moths
- From All Walks of Life: Paintings of the Figure from the National Academy of Design
- A Gift to the Street: A Patternbook of Victorian Architecture
- Ice Age Art
- Image of the Black in Western Art
- Impressions/Expressions: Black American Graphics
- Invisible Light
- Jacob Jordaens: Drawings and Prints
- Jupiter and Its Moons
- Mexico as Seen by Her Children
- Musical Manuscripts
- The Photographer’s Hand
- Photographs from the Collection of the National Portrait Gallery, Smithsonian Institution
- Pochoir
- Portraits and Dreams: Photographs by Appalachian Children
- Ryjy Rugs from Finland: 200 Years of a Textile Art
- Sèvres Porcelain
- Western Views and Eastern Visions
- The Working American





In search of what Duke Ellington called that perfect note, saxophonist Bob Wilber, leader of the Smithsonian Jazz Repertory Ensemble, rehearses for a concert sponsored by the Division of Performing Arts.

## PUBLIC SERVICE

JULIAN T. EUELL,  
ASSISTANT SECRETARY FOR PUBLIC SERVICE

### *Anacostia Neighborhood Museum*

Located off the Mall in historic Anacostia, this Smithsonian community-based museum of Afro-American history and culture collects, studies, preserves, and exhibits the evidences of the contributions of black people to American history—from a black perspective.

Named for the American Indians once indigenous to this Southeast Washington community, the Anacostia Museum—since its founding in 1967—has produced innovative and stimulating exhibits for new museum audiences. A prototype among museums, its multi-ethnic exhibits and multidisciplined programs offer a new approach to historical exhibits of varying themes. A pioneer in ethnic, family, and social history, and more than a storehouse of knowledge, the museum has significantly contributed to the concept and dialogue of the black diaspora.

Successful in reaching people of different backgrounds and lifestyles, the museum has served its local constituency through the development of programs and special-interest exhibits which are changed periodically. It has also reached a broad national audience through traveling exhibitions, many of which are available through the Smithsonian Institution Traveling Exhibition Service. Among them are *The Frederick Douglass Years: 1817–1895*, *Blacks in the Westward Movement*, and *Black Women: Achievements Against the Odds*.

The professional staff of the museum is able to take an idea and transpose it through visual concept to a finished three-dimensional exhibit. In-house capabilities include design, graphics, cabinetry,



photography, modelmaking, and conservation. As the design and production arm of the museum, the exhibits laboratory is equipped and staffed to be almost totally self-sufficient.

The Anacostia Neighborhood Museum experiments with new techniques and formats in the development of its educational programs. Participatory programs encourage both young and older visitors to explore and expand their notions of a museum. Educational activities run the gamut from inquiry-based tours and teacher-training workshops to black history flannelboard stories and presentations by performing artists. A new program is the department's Black Heritage Puppet Theater which orients and prepares young people for museum visits. Curricular materials such as *A Walk Through "Old" Anacostia*, *How to Turn Your Classroom into a Museum*, and *Frederick Douglass: A Fighter for Freedom* are examples of publications serving both a local and a national audience of museum educators, teachers, and librarians. Additionally, the museum continues to expand its services to the handicapped through exhibit labels and summaries written in simplified English for the hearing-impaired, and self-guided tape cassettes for the visually handicapped.

Among the exhibitions scheduled for the 1980s are *Anna J. Cooper: A Voice from the South*, a retrospective on the literary and culturally aesthetic period of the Harlem Renaissance, and *Antiquity: Africa and World Culture*.

### *Division of Performing Arts*

The 1980 publications and programs of the Division of Performing Arts within established guidelines increased public enlightenment, capitalized on the experience of previous years, and strengthened support of museum exhibits and interpretive functions. Examples of these activities include an exhibition and working conferences on the culture of the civil rights movement. *We'll Never Turn Back*, an exhibition of photographic documentation of the movement, was presented by the division in collaboration with the Museum of History and Technology. *Voices of the Civil Rights Movement* included workshops on the role of music in the civil





In a summer workshop sponsored by the Office of Elementary and Secondary Education, teachers discover that extraordinarily rich but often neglected curriculum resource—a local cemetery. *Below.* As part of the Anacostia Neighborhood Museum's 1980 series, award-winning author Mrs. Eloise Greenfield shares readings from her stories and poetry with a uniquely responsive audience.



rights struggle together with public concerts of the songs that lent energy and momentum to various communities. The working conferences reviewed the oral and visual record of the movement and analyzed its basis in black oral tradition. This project was cosponsored by Howard University, which received a grant from the National Endowment for the Humanities.

Another example of intrabureau cooperation was the Spring Celebration and Conference on the History of American Popular Entertainment, a joint venture of the division and the Museum of History and Technology. Other programs of this nature included the Holiday and July Fourth Celebrations, collaborations again with the Museum of History and Technology; concerts of twentieth-century music presented with the Hirshhorn Museum and Sculpture Garden; performances of Asian music and dance supported by an exhibit of artifacts from the Museum of Natural History; and concerts of nineteenth-century music performed at the Renwick Gallery.

Programs devoted to public enlightenment of the arts in America included five separate series of concerts of jazz, country music, the American musical theater, the American dance experience, and black gospel music. These programs were so enthusiastically received by the public that additional performances had to be scheduled.

The Discovery Theater presented eight month-long performances of puppet theater, and explorations of dancing, clowning, acting, and singing to audiences of more than 62,000 children. This activity continues to bring children to the museums and, through carefully prepared learning packets designed for classroom use, to enhance the educational experiences of young visitors.

Participating artists for the 1980 season included Roger Miller, Max Morath, the Dixie Hummingbirds, Don Gibson, Jaap Schröder, Sonya Monosoff, Malcolm Bilson, Tom T. Hall, The Art Ensemble of Chicago, Woody Herman, the Emerson Quartet, the 20th Century Consort, Richard Smallwood and Myrna Summers, Stan Getz, The Royal Dancers and Musicians of Bhutan, Gunther Schuller, the United House of Prayer, and many others.

Recordings released by the Division of Performing Arts included: *Songs of the Civil Rights Movement*, a musical documentary; *The Legendary Freddie Keppard*, a rare, archival reissue



of performances by one of the early jazz pioneers; *Funny Face and Band Wagon*, archival reconstructions of original-cast recordings from the musical theater; *The Music of James P. Johnson and Fats Waller*, performed by the Smithsonian Jazz Repertory Ensemble; and *Duke Ellington—An Explosion of Genius*, featuring the work of one of America's greatest composers in 1938, 1939, and 1940. The division also continued to publish its bimonthly educational journal *Notes on the Arts*, and several staff members contributed to popular and scholarly publications.

### *International Exchange Service*

Since 1851, the International Exchange Service has provided a system whereby learned societies in the United States can exchange their publications for those of foreign organizations. This program has continued through the years, enabling many colleges, universities, scientific societies, and medical and dental libraries to exchange their current and duplicate publications with similar organizations in other countries. During fiscal year 1980, publications were received from more than 260 organizations in the United States for distribution overseas, and—for United States addressees—from more than 400 foreign organizations.

In 1886, the service was designated as the bureau through which United States government publications are exchanged with foreign governments for their official publications. This exchange includes the daily issues of the *Congressional Register* and *Federal Register* and the weekly issues of the *Compilations of Presidential Documents*, plus all other publications designated by the Library of Congress for depository libraries.

### *Office of Elementary and Secondary Education*

A firm belief in the power of museum objects as educational resources is the guiding principle behind the activities and programs of the Office of Elementary and Secondary Education (OESE). With



the conviction that it is equally as important for students to learn to use works of art, natural history specimens, historical artifacts, and other museum objects as research tools as it is for them to use words and numbers, OESE continues to serve the Smithsonian's education offices while working to meet a solid commitment to foster the educational uses of museums in the Washington, D.C., area and throughout the nation.

In fiscal 1980, this commitment led to the expansion of a major program (now in its second year) designed to make Smithsonian education programs more accessible to disabled children and adults. With support from the Smithsonian Educational Outreach Program, OESE is working with bureau education offices to adapt educational programs to the needs of hearing-impaired visitors as well as the needs of visitors with such developmental disabilities as cerebral palsy and mental retardation. A number of programs have been undertaken. (1) Sign interpretation classes for volunteers and staff are conducted at both beginning and intermediate levels. (2) A series of four one-week summer courses for hearing-impaired children involve sessions at the Chesapeake Bay Center for Environmental Studies, the National Zoological Park, and several National Mall museums. (3) Sign and oral interpreters are provided for performances and special events such as puppet shows and the Festival of American Folklife. (4) An induction loop system for visitors who use hearing aids has been installed in Baird Auditorium. Plans are under way for a special series of Institution-wide programs and events to mark the International Year of Disabled Persons in 1981. When OESE provided an interpreter for a hearing-impaired child who recently visited the Smithsonian, the child's mother wrote: "This is to convey our deep gratitude to you for arranging for an oral interpreter for our daughter, Lynn, on our visit to Washington, D.C. It was a wonderful learning experience for her . . . and the first time she's gotten all the information on any kind of tour." Although the programs highlighted here are only a few of the many now available to disabled visitors, they are excellent indications of the work being done in this area by OESE and other Smithsonian education offices.

On the local level, OESE continues to offer a number of programs that have proven successful in the past and are expanding in new directions. *Let's Go* (a monthly newsletter) and *Learning Op-*

*portunities For Schools* (an annual brochure) inform teachers of the ever-growing variety of Smithsonian services available to students. Multiple copies are sent free to approximately 1,200 schools in the Washington, D.C., area.

In December, the third annual "Teacher's Christmas Program" was held at the National Museum of History and Technology. Traditional Christmas games and foods enriched a tour of the museum's holiday exhibits. In May, the seventh annual "Teacher's Day" brought more than 85 Washington-area teachers and Smithsonian staff together for activities centering around the National Museum of Natural History's Naturalist Center and Insect Zoo. More than 370 Washington-area teachers participated in a summer program that included courses on such subjects as using the museum to teach writing skills, Victorian architecture, teaching about the nineteenth century through museum objects, and insects in your classroom.

In addition to these programs for *local* teachers, two one-week summer workshop sessions were offered to teachers nationally. These courses, held at the Smithsonian, involved classroom teachers, school librarians, and curriculum specialists from twenty-seven different states in graduate-level work accredited by the University of Virginia. Using Smithsonian collections and exhibits, course participants learned how to employ objects, portraits, and related community resources—such as historic houses—as teaching tools. Life in nineteenth-century America following the Civil War served as a theme for the course instruction. As a final project, the teachers were required to develop curriculum units in art, history, and science that would draw on the resources of their own communities. This new OESE effort was well received by all participants and will be repeated in 1981. One teacher wrote on the evaluation: "I have found this to be the most stimulating course I've had in many a year. I consider myself extremely lucky to have been chosen and I do not leave disappointed. I only wish there were more such courses to look forward to."

Also for teachers nationally, the distribution of *Art to Zoo*—a publication to promote the use of museums, parks, libraries, zoos, and other community resources—reached approximately 50,000 classrooms. During the 1979–80 school year, *Art to Zoo* was expanded to six pages to include a student supplement with each

issue. Called the "Pull-Out Page," this supplement contains articles and activities on a variety of subjects relating to the Smithsonian collections. As one teacher wrote us: "The newsletter *Art to Zoo* is a continuing source of inspiration to me. I look forward to each issue and want to thank you for the beautiful work you are doing for teachers throughout the country."

In conjunction with *Art to Zoo*, two new audiovisual projects have been developed. Supported by a grant from the Women's Committee of the Smithsonian Associates, staff members from OESE and the National Portrait Gallery produced a slide package entitled *The Museum Idea*, showing elementary school teachers and students ways to create a museum in the school classroom using materials readily at hand. This package—slides, a taped narration, and a teacher's guide—is now available for national distribution.

In cooperation with the Department of Anthropology, OESE is continuing preparation of a media kit for high school students drawing on the extensive papers and collections of the nineteenth-century naturalist, Edward W. Nelson. This program, funded by the Smithsonian Educational Outreach Program, was tested in schools during the 1979–80 school year and will undergo final testing and revision in 1980–81. It is anticipated that the *Nelson Kit* will be the first in a series of curriculum units on various aspects of the Smithsonian collections in art, history, and science.

In 1980, OESE sponsored its sixth annual program for summer interns. "Intern '80" brought twenty-seven high school seniors from rural and inner-city communities to the Smithsonian to participate in learning and service projects. The students worked under the guidance of curatorial and technical staff members in various parts of the Institution. The program often provides students with new perspectives; as one intern explained, "The different kinds of people I worked with made my job even more enjoyable and made me feel at home. I enjoyed the chance to see a museum behind the scenes and the work that goes into keeping a museum alive."

Other important OESE activities include developing a series of teacher workshops and student tours for the District of Columbia public schools, with support from the Cafritz Foundation; and expanding the scope and understanding of the professional museum educator through participation in national and regional conferences



and workshops. OESE staff members also helped to plan and teach seminars on docent training, museum/school relations, and museum interpretation. These seminars were offered at the Smithsonian by the Office of Museum Programs.

### *Office of Smithsonian Symposia and Seminars*

The year 1980 brought many opportunities for the broadening of the Institution's symposia and seminar programming, linking the humanities and sciences for the benefit of students at the high school and university levels, as well as the continuing exchange of new knowledge among more advanced scholars and the sharing of its implications with academic, professional, and concerned lay audiences. The office's activities include the bringing of specific groups to the Smithsonian for specially prepared interdisciplinary presentations by the Institution's curatorial and research staff and the providing of specialized educational outreach.

In addition to the year's accomplishments, intensive planning for the seventh international symposium, *How Humans Adapt: A Biocultural Odyssey*, has brought about the selection of the project's principal participants, each of whom will provide an original statement forming a chapter in the volume to be published from the November 1981 program. The symposium is organized to examine the present situation of our species, how we got where we now find ourselves, and what our directions should be for the future. Under the chairmanship of James V. Neel, Lee R. Dice University Professor of Human Genetics, University of Michigan Medical School, a small informal committee is developing a week's calendar of scholarly sessions and related events. Serving with Professor Neel are Stephen Toulmin, Committee on Social Thought, University of Chicago (symposium rapporteur), Donald J. Ortner, Department of Anthropology, National Museum of Natural History (symposium editor), and Director Wilton S. Dillon and Associate Director Dorothy Richardson, Office of Smithsonian Symposia and Seminars.

Through the initiative of Senator Robert Morgan, Smithsonian Regent, the second and third seminars in the series arranged for

gifted high school students from rural North Carolina took place in October 1979 and April 1980. "The Quest for Beauty" centered on deeper understanding of the arts and humanities, while "Human Development: A Zoological Perspective" pursued a study of primate behavior and human civilization. Organized by Carla M. Borden and financed by the Z. Smith Reynolds Foundation and the North Carolina Association of Electric Cooperatives, Inc., these seminars featured presentations by Smithsonian curators, participation in ongoing cultural events, special behind-the-scenes briefings, and informal discussion over several days. This highly successful program will continue and be adapted to serve youth from other parts of the country.

Observance of the Einstein Centennial continued with the colloquium *The Muses Flee Hitler* held February 7–9, 1980, for which sixteen essayists were assembled to examine the mass upheaval caused by the rise of Nazism—and the influence on American cultural expression of those coming to the United States. The sessions covered such aspects of this historic phenomenon as the intellectual decapitation of Germany under the Nazis; American refugee policy in historical perspective; the Bauhaus and its further development in America; and the contributions of newly arrived artists and intellectuals to American writing, music, architecture, science, and filmmaking.

Interest has been stimulated in establishing a public dialogue on citizenship education and how participation in self-government is being influenced by new advances in communications technology. Director Dillon has helped organize a forum to examine how educational institutions and civic action groups might best contribute to greater public awareness of the *responsibilities* and duties of individuals as interdependent with their *rights*.

An interdisciplinary seminar held August 3–8, 1980, and designed by the office to introduce a group from the University of Hawaii to the cultural and curriculum resources at the Smithsonian was highlighted by the interest of Senator Inouye and Representative Heftel in this special program. Developed by Dorothy Richardson in consultation with the Institution's professional staff, the series of activities serves as a prototype for future seminars prepared for other students and faculty to supplement formal course work. Professor Alex L. Pickens of the Uni-

versity's College of Education, who brought the students to Washington, viewed the week as one of enormous educational value providing learning experiences not possible elsewhere.

The office's earlier activities still attract interest and requests for associated materials (for instance, *Play and Inventiveness* in May 1979 and *Pompeii and the Vesuvian Landscape* in September 1979). Together with many other endeavors and services, the Smithsonian's symposia and seminar series furnish continuing extension of its program activities, which it develops as essential elements of the Institution's educational outreach goals.

### *Office of Telecommunications*

Extraordinary success greeted an innovative radio project launched last year. *Smithsonian Galaxy*, the lively 2½-minute feature series starring the curatorial, scientific, and research staffs of the entire Institution, grew to a regular listenership of 13,000,000 in just over a year's time. Broadcast by 190 stations in forty states, in Canada and Australia, and in West Germany over the Canadian Forces Network, *Galaxy* now reaches a population coverage of 60,000,000.

As *Radio Smithsonian*, a half-hour weekly program, entered its second decade on the air, the Office of Telecommunications (otc) took action to begin distributing the program over the public radio satellite system. Satellite distribution allows the programs to be more timely and will boost potential audiences even higher than the current listenership of 6,000,000.

The enthusiastic reception of these ventures encourages otc to continue to be bold in extending the Institution's reach through every possible media form. Consequently, the staff is conducting an extensive survey of the growing cable television field as an additional outreach avenue. otc's goal is for the Institution to be in the forefront of cable television, producing quality programming for specialized audiences as well as the general public both in this country and abroad.

Previously produced award-winning films which show the broad range of Smithsonian activities provide a firm base for entry into the cable field. Films such as the overview, *The Smithsonian In-*



stitution with *S. Dillon Ripley, Secretary*, and the re-creation of the 1876 Philadelphia Centennial Exposition, *Celebrating a Century*, have already been telecast over cable systems in 1980. Similar plans are under way for *Mirrors on the Universe: The MMT Story*, which documents the creation of the multiple mirror telescope, one of the world's most advanced astronomical instruments, and *Reunions: Memories of an American Experience*, which focuses on people who have intimate knowledge of objects on display in our museums.

OTC is developing new program ideas for video production, both for educational and information/entertainment use on cable systems. One such proposal would concentrate on live performances of musical evenings, public festivals, and scholarly seminars.

Two films were produced in 1980: *A Sense of Discovery*, which profiles the National Collection of Fine Arts, the Smithsonian center for study and encouragement of American art, and *Dragon of the Trees: The Green Iguana*, an animal behavior film which is the product of ten years of research at the Smithsonian Tropical Research Institute in Panama. Both are slated for telecast over public broadcasting stations around the country as well as over cable systems.

Research and development for the office's next major film, a sequel to the overview film on the Institution, is in progress. Expanding on a theme touched upon in *The Smithsonian Institution with S. Dillon Ripley, Secretary*, OTC projects a thoughtful examination of man's collecting instinct and the breadth and depth of the Smithsonian collections. As Mr. Ripley has stated, "The truth exists in objects." Our museums are more than just cabinets of curiosities; the goal is to study why man collects, how, and to what ends.

Explorations continue for projects in the areas of commercial network specials and for children's instructional programming based on active use of Smithsonian collections.

### *Smithsonian Exposition Books*

Smithsonian Exposition Books (SEB) extended its list of popular Smithsonian-related books with two major publications in fiscal

year 1980. *The American Land*, published in November, is a sampler of the historical, cultural, and geographic diversity of the nation, as seen through the eyes of artists, photographers, and essayists, many of them members of the Institution's staff. From the initial promotional mailing to Smithsonian Associates more than 54,000 copies were sold, in addition to those distributed to the book trade through W. W. Norton, Inc.

The month of May saw publication of *Every Four Years: The American Presidency*, produced under the editorial supervision of Dr. Robert C. Post, who took a leave of absence from the National Museum of History and Technology to direct the project. Drawing on the work of scholars and researchers within the Institution as well as historians and journalists outside, the book received significant praise from reviewers in print and broadcast media. In two promotional campaigns to Associates during the election year, sales of *Every Four Years* are expected to exceed 90,000 copies.

Response to backlist Exposition Books titles continues to be strong, with *A Zoo for All Seasons*, SEB's offering on the National Zoological Park, enjoying considerable popularity. With a highly successful promotional program in the summer of 1980, over 150,000 copies have been placed in the hands of readers.

In May 1980 James K. Page, Jr., resigned as director of the SEB program. Glen B. Ruh, the Institution's publications coordinator, was appointed acting director, bringing some fifteen years of editorial and management experience to the position.

Exposition Books surveyed and tested proposals for a number of potential projects for the future, and continued editorial development of books planned for 1981 and beyond. These projects include an anthology of articles from the first ten years of *Smithsonian* magazine, a cultural and historical atlas of the United States, a major book on the evolution of life on Earth, and preliminary work on a Smithsonian collections series.

At the close of the fiscal year the SEB staff was putting the final touches on *Fire of Life: The Smithsonian Book of the Sun*, scheduled for publication in February 1981. As in previous years, SEB's goals are to continue publication of books related to the Institution's collections and programs, to expand its marketing efforts to reach a broader readership, and to contribute positively to the Institution's trust income.

## *Smithsonian Institution Press*

There were three developments of principal importance to the Smithsonian Institution Press during the year. The first of these was the appointment of former Deputy Director Felix C. Lowe as director of the Press (succeeding E. F. Rivinus, who will continue a more relaxed association with the Press as director emeritus). The second development was the gratifying conclusion drawn by the Schiffrin Panel (a committee of senior publishers invited to conduct a formal review of Smithsonian publishing) that the "Smithsonian Institution Press appears to have a clearly defined program, to be well managed, and to be in a financially stable position." And third, thanks to an invigorated sales program and two highly successful copublishing and codistribution arrangements with a prominent commercial publishing house, the Press for the first time in its history returned a significant net surplus to the Smithsonian treasury from its trust-funded publishing operations.

Worthy of note also are benefits to the Smithsonian Institution Press from participation in the latest developments in computerized composition. After some initial efforts which did not prove successful, the production staff of the Press has developed with a prominent Baltimore printing house a completely revamped composition and production system, utilizing modern computer technology, for all of the series publications. The results have brought notable reductions in turnaround time for series manuscripts, with consequent savings in both costs and staff time. Another Press publication produced during the year by computerized methods was the index volume of the scholarly four-volume *Arts in America: A Bibliography*.

Steady recognition of the Press's improved status as a scholarly publisher is reflected by increasing numbers of manuscripts—by both Smithsonian staff members and authors outside the Institution—submitted to the Smithsonian Institution Press for publishing consideration. Many of these, particularly those from non-staff members, must be rejected as not germane to Smithsonian collections or research interests. Nonetheless, the number of "jobs" logged in, either for full publication or for production servicing by the Press in fiscal year 1980, totaled 262 compared with 240 in fiscal year 1979. Of the 1980 titles, 100 were trade books, series



publications, exhibition catalogs and checklists, annual reports, and other books (compared to 97 in these categories in 1979). The remainder were booklets, brochures, folders, and invitations—all, however, requiring editorial, design, and production services by Smithsonian Institution Press staff.

The quality of books edited, designed, and produced by Smithsonian Institution Press staff continued as in past years to be recognized by awards won in national and local competitions. *Arts in America* was a finalist in the Reference Books category of the American Book Awards competition. *The Catalogue of the Hans Syz Collection* was chosen for exhibit among the 33 books selected from 273 entries by the Association of American University Presses (AAUP), and also by the American Institute of Graphic Arts for their exhibit *Graphic Design USA*. *Natural Man Observed* was a second Smithsonian Institution Press selection in the AAUP's 33-book exhibit. *Capital Losses* and *Perceptions and Evocations* won first and second places in the annual National Association of Government Communicators' Blue Pencil Awards. *Mary Cassatt* and *Fernando Botero* were selected by the Art Directors Club of Metropolitan Washington for exhibit in their thirty-first annual show.

Most of the Press's financial success during the year resulted from continued sales of *The Smithsonian Collection of Newspaper Comics*, copublished in 1978 by the Smithsonian Institution Press and Harry N. Abrams, Inc., and from *The National Air and Space Museum*, published by Abrams but codistributed by the Press under a special agreement. Other cooperative arrangements worked out by the Smithsonian Institution Press during the year included an agreement with the British Museum to act as United States distributor for the *Fossil Hominids* series, and agreements with the following United States and overseas publishers for copublishing for book club or overseas distribution of Smithsonian Institution Press books: Oxford University Press and Macmillan's Birding Book Club (*The Great Gray Owl*), the Military History Book Club and Jane's Publishing Company (*Messerschmitt Me 262*), and Harry N. Abrams, Inc. (*History of Turkish Art*).

Finally, the Smithsonian Institution Press director and staff undertook special efforts to improve contacts both within the Smithsonian Institution and outside. By agreement with Smithsonian



At the helm of the Smithsonian Institution Press, scholarly and trade book publishing arm of the Institution, are Ted Rivinus (*left*), director emeritus, and Felix C. Lowe, director, shown holding copies of recent *sir* publications.

Institution bureaux, editorial advisory committees have been set up to assist the Press in acquisition and review of manuscripts relating to air and space, art and art history, and natural history. Smithsonian Institution Press representatives conducted information sessions with several Smithsonian Institution bureaux, including the Smithsonian Tropical Research Institute in Panama, and the director spent a valuable week in London bringing Smithsonian Institution Press books and book prospects to the attention of overseas agents and potential copublishers.

In short, fiscal year 1980 has been a year of both growth and recognition of the Smithsonian Institution Press as the professionally competent scholarly and trade book publishing arm of the Smithsonian Institution.



## Smithsonian Magazine

During its tenth anniversary year, the magazine produced a record number of editorial pages, primarily focused on subject areas of interest to the Institution. The aim has been to cover important developments in the arts, the sciences, and scholarship, and at the same time to cover interesting subjects not apt to be reported upon in other general magazines.

The activities of the Institution were addressed on a regular basis in Secretary Ripley's "View from the Castle" column, in Edwards Park's "Around the Mall" column, and in the Smithsonian Highlights section. During the latter months of the year each Highlights section included, in addition to its regular announcements, a small feature on a particular exhibition.

There were also major feature stories on important Smithsonian exhibitions, including the Miró show at the Hirshhorn, as well as on parts of the Institution itself: for example, the Dibner Library and the Front Royal Conservation and Research Center. A number of Smithsonian authors were represented, including Joshua Taylor (NCEA) and F. R. Harnden, Jr. (Astrophysical Observatory). Edward Thompson's 1979 trip to China resulted in two cover stories during the last year—on the buried army of the Emperor of Qin, and on the arts of the Chinese Bronze Age.

Energy and the environment were important focal points. There were articles on current oil-spill research, offshore oil exploration, the synfuels controversy in the West, and the country's first solar village. Major environmental stories included those on the future of the Adirondack Park and, in recognition of the year 1980's designation as The Year of the Coast, on the dangers of development on the nation's barrier islands.

The natural and physical sciences received attention in every issue. Story subjects included the discovery of perennial corn, new challenges to Einstein's theories, the re-emergence of the carp as a useful and admired fish, the return to Jordan of the Arabian oryx, current research in biofeedback, the satellites of Jupiter and Saturn, and the rare lion macaques of India. Of particular note were stories on research in the rain forest canopy, on sociobiology, and on new theories of human evolution. While *Smithsonian* is not a news magazine, its coverage of the Mount Saint Helens eruption



demonstrated that the magazine has flexibility to respond to breaking events when necessary. The magazine also continued its practice of looking periodically at major institutions of government, with examinations of the TVA and the Library of Congress, both in periods of change as they respond to new mandates.

Coverage of the arts included stories on exhibitions of the works of John Singer Sargent, Picasso, Jasper Cropsey, the Post-Impressionists, and Edward Hopper; there were also articles on the Corning Museum of Glass, the Whitney Museum's fiftieth anniversary, the Albright-Knox Art Gallery in Buffalo, and the restoration of Monet's home at Giverny. History was represented with major stories on the Mexican Revolution, the fifteen-hundredth anniversary of Saint Benedict, trans-Atlantic aviators Alcock and Brown, and the international conference on the Russian sale of Alaska to the United States.

The magazine as a business continued to do well. Circulation now approaches 1,900,000 and advertising pages totaled 1007 (compared to 855 in fiscal year 1979). The circulation is truly coast-to-coast: California, the most populous state, has the greatest number of Associates, 242,000. In April National Associate membership dues were increased to \$14 having been held at \$12 since August 1976. As in previous years—and in spite of double-digit inflation—the magazine made a substantial contribution to the unrestricted trust funds of the Institution.

### *Visitor Information and Associates' Reception Center*

Refining and expanding its public service activities during fiscal year 1980, the Visitor Information and Associates' Reception Center (VIARC) continued to function as the central point of contact for a wide variety of information and assistance programs. Serving the general public, Associate members, and Smithsonian staff, VIARC programs operate seven days a week and involve the coordination of large numbers of volunteers in many of its activities.

Major service units include Seven-Day Information Services, the Public Inquiry Mail Service, and Staff/Volunteer Services. As the parent program and nucleus of all Seven-Day Information Serv-

ices, the Information Specialist Program currently utilizes the talents of some four hundred volunteers to provide visitor assistance at thirteen information desks located in most National Mall museums and the Renwick Gallery. On the eve of the program's tenth year of operation, Mr. William Grayson, the program's first director, was the honored guest at the annual holiday awards event. In fiscal year 1980, weekday and weekend Information Specialists together staffed desks at all times, achieving 88 percent of maximum desk coverage. During the year, supplemental training for Information Specialists included two major enrichment opportunities: the first, an introduction to a new gallery, "Early Flight," at the National Air and Space Museum; and the second, a sampling of exhibits and educational programs offered at the newest Smithsonian museum, the Museum of African Art.

Over and above their weekly commitment of information service hours, eighty-three Information Specialists gave hundreds of hours to assist the Communications and Transportation Services Division during the Institution-wide changeover to the Centrex telephone system. In another extraordinary effort, sixty-three Information Specialists conducted more than one thousand visitor interviews as part of a major study initiated by VIARC to determine the need for auxiliary transportation between National Mall museums for visitors with ambulatory difficulties. Not only was the need for intermuseum transportation confirmed, but much valuable secondary data was gained. The study, funded by a 1979 Smithsonian Society grant, was conceived and executed by graduate students in the Department of Urban and Regional Planning of George Washington University.

Three additional programs complete the Seven-Day Information Services unit: the Telephone Information Program provides a central source of daily "live" telephone information about the Smithsonian and its activities. The changeover to the Centrex system made possible the addition of needed incoming lines and facilitated response to hundreds of thousands of telephone inquiries. Service to disabled visitors was improved with the installation of a telecommunication device for the deaf (TDD). Further service improvements are anticipated in 1981 with the installation of a Continuous Traffic Study system to be monitored by the Chesapeake & Potomac Telephone Company.

The Group Orientation Program completed its first full year of operation in June 1980. Some 10,000 Smithsonian visitors, arriving in organized groups, were able to make informed choices on the use of their limited time at the Smithsonian after attending the 30-minute slide/lecture orientation provided by specially trained volunteers. Groups served ranged from Hubert Humphrey Fellows to Smithsonian Associate members to Campfire Girls. In response to a request from the Office of Personnel Administration, the group orientation presentation was adapted to provide new Smithsonian employees with an overview of the full scope of the Institution's activities. Videotapes of volunteer presentations made by the Office of Telecommunications proved a useful tool in program evaluation. The most serious program obstacle anticipated for fiscal year 1981 is the severe shortage of suitable meeting spaces in National Mall museums.

The Castle Docent Program offered a record 174 tours of the historic Smithsonian Institution Building for some 2,500 participants in National Associate "Washington Anytime Weekends," "Smithsonian Sampler Weekends," and Selected Studies seminars. The increasing requests for tours required a 50 percent increase in this docent corps.

The publication of Office Memorandum 809 in July 1980 documented for the first time the Institution's policy on public inquiry mail and the role of VIARC's second major program unit, the Public Inquiry Mail Service (PIMS). As the central research, response, and/or referral point charged with attending to the Institution's public inquiries, this office is involved in the production of a wide variety of printed informational materials. Mail volume currently exceeds 30,000 letters annually.

Practical steps taken to respond efficiently to this large volume of mail include the following: collaborating with museum divisions to create and/or update and expand a variety of preprinted materials, such as fact sheets, bibliographies, and leaflets on popular topics; utilization of volunteer assistance on an individual basis in museum divisions or departments to aid in the associated research, writing, and editing called for; publication of a booklet, *Planning Your Smithsonian Visit*, with an expanded edition for Associates, which answers the most frequent questions of prospective museum



visitors; and using a new computer program to record mail statistics and trends as well as to pinpoint areas of popular interest.

Acting in an advisory capacity, PIMS aids Smithsonian Auxiliary Activities units by compiling and circulating a listing of Smithsonian sale products to members of the Smithsonian Business Council, by participating in council meetings and activities, and by providing mail referral assistance.

Activities of VIARC's third major program area, Staff/Volunteer Services, were highlighted by a number of "firsts." The Independent Volunteer Placement Services' (IVPS) system for identifying and registering volunteers working behind the scenes provided the data base which enabled the program to sponsor the first social event to recognize the collective contribution made to the Institution by the hundreds of volunteers working in this capacity. The September reception paid tribute to 450 volunteers whose work with the professional staff in fiscal year 1980 reflected nearly 100,000 hours of project assistance. Approximately 50 percent of these volunteers were interviewed and placed through the IVPS.

Another precedent was set when, in response to staff requests, groups of volunteers were recruited to satisfy a variety of special needs. One such request involved staffing the Employment Information Office in the Office of Personnel Administration. Guidance and support were also provided to the Mt. Hopkins Observatory for the organization of their first corps of office volunteers. A computer program was instituted to maintain pertinent statistical and assignment data on the growing number of volunteers working in nonpublic areas. Research was begun on a publication to document the history and tradition of Smithsonian voluntarism and to outline the current structure of volunteer programs at the Institution.

Also administered through this service, the Special Magazine Files fulfilled four thousand National Associate memberships for Smithsonian employees and eligible volunteers. Computer systems for this membership file were updated and the *Smithsonian* magazine's courtesy mailing list absorbed.

## ADMINISTRATION

JOHN F. JAMESON,  
ASSISTANT SECRETARY FOR ADMINISTRATION

### *Administrative and Support Activities*

During the year continued attention was given to the five-year planning and budgeting process, inaugurated last year, as well as other steps contributing to an orderly but flexible approach to administrative support to the Institution's programs and activities. Particular emphasis was placed upon equal employment opportunity, implementation of the Civil Service Reform Act of 1978, improving facilities management, and further efforts toward energy conservation. In addition, a new dimension to public information programs was added this year with the advent of the Smithsonian News Service.

The Institution's five-year planning effort, as reported last year, resulted in the first Five-Year Prospectus, for fiscal years 1980-84. This process has proven its worth and has strengthened the Smithsonian's approach to identification and development of future plans and objectives. The second Five-Year Prospectus, for 1981-85, was approved by the Board of Regents at its January 28, 1980, meeting and was subsequently made available to the Office of Management and Budget, the Congress, and others. The third edition of the Prospectus, for 1982-86, was reviewed by the Board of Regents at its September 22, 1980, meeting. Annual revisions to the Prospectus provide the means to reflect changing goals, to identify sources of funding required, and to communicate the Institution's aspirations to all parties involved in its management and oversight, as well as to the general public.

Equalizing opportunities for employment continues as a goal of major importance to the Institution. With the support of Smithsonian senior management, the Office of Equal Opportunity's

emphasis on affirmative action this year has yielded several significant accomplishments, all of which are designed to enhance the hiring of minorities and women and to reduce or eliminate their underrepresentation. Equal opportunity training for executive staff and other supervisors provided an understanding of the legal basis and process involved in operating an effective affirmative action program. The further development of affirmative action plans provided an analysis of Smithsonian occupations and a basis for hiring goals in four occupations—museum curator, museum technician, visual information specialist, and zoologist. The establishment of the Federal Equal Opportunity Recruitment Program (FEORP), in conjunction with the Office of Personnel Administration, provides a systematic means for the recruitment and selection of minorities and women. The first students in the Cooperative Education Program arrived in September 1980 for work-study tours in various museums and other bureaux. The office also continues to oversee efforts to make programs and activities accessible for handicapped visitors, in addition to an affirmative action program for the handicapped. Guidelines for program access by visitors have been developed and timetables for full accessibility are being planned. For 1981, the International Year of Disabled Persons, the Institution will participate in programs for the year planned to promote an awareness and understanding of people who are handicapped.

Substantial progress was made in meeting provisions of the Civil Service Reform Act, which continues as a major activity of the Office of Personnel Administration, along with the strengthening of recruitment and hiring of women, minorities, and disabled persons. Performance appraisal and merit pay plans required by the act are well under way, with full implementation expected before the imposed deadline of October 1981. New and comprehensive guidelines for the trust fund employees of the Institution have been developed and will be issued at the beginning of the next fiscal year. An Executive Resources Board was established this year for the development of senior managers, and the Office of Personnel Administration has formed a training branch to manage greater attention to this area. Other accomplishments include further development of an integrated personnel and payroll system in conjunction with accounting and computer services staff, which will lead to an effective, automated system.



The formation of the Office of Facilities Services, as noted last year, has contributed significantly to the oversight and management of construction projects as well as protection, health, safety, architectural, and plant services. The activities of this office contributed to the substantial progress made on the development of the Museum Support Center and also Quadrangle planning for the area behind the Smithsonian Institution Building.

Energy conservation remains as an important objective. The Institution's program, administered through the Office of Plant Services, coupled with the efforts of a panel of museum and other staff, has improved the monitoring and control of Smithsonian energy consumption, resulting in a cost avoidance of nearly \$600,000 during the year. Further development of a master plan for building heating and other systems will contribute to this effort. A measure of the Institution's success is that the use of steam and electricity is expected to remain relatively constant through fiscal year 1982 despite weather variations, number of visitors, and the addition of new facilities. Since fiscal year 1978, the Smithsonian has avoided an estimated \$1.5 million in utilities costs as a result of the conservation steps undertaken.

Other highlights include further efforts to bring the security force under the Office of Protection Services up to strength and to improve health programs for visitors and staff. In the Office of Design and Construction (formerly the Office of Facilities Planning and Engineering Services), major work included the Museum Support Center and also the Quadrangle project as well as construction of support buildings for the Chesapeake Bay Center for Environmental Studies and for the Smithsonian Astrophysical Observatory's facilities in Arizona. Work continued on building entrances and other areas to improve access for the handicapped and on a wide range of other repair, renovation, and improvement projects.

New procurement policies for the Institution's auxiliary activities have enhanced their financial management and clarified the role of the Office of Supply Services. The Office of Computer Services continued provision of major support to the inventory of the national collections. Other significant projects included development of an on-line Animal Food Management Program for the National Zoological Park which will be expanded to include nutritional information. An automated registration system for events was formed

for the National Associate Regional Events Program, and the first phase of a program was established for exhibitions circulated by the Smithsonian Traveling Exhibition Service to assist in the scheduling, booking, and monitoring of shows on tour. Photographic and printing services are progressing with steps that include improved supervision of photographic operations, cataloguing of negative holdings, and conversion of nitrate negatives to safety film.

As an outgrowth of existing public programs to reach people who do not come to the Smithsonian, the Office of Public Affairs, under the Coordinator of Public Information, launched a free, monthly feature story service in October 1979—the Smithsonian News Service. The service distributes stories, often with photographs and illustrations, on results of Smithsonian research and education programs; stories range from coral reef research to women aviators. The service is used by well over 1,400 newspapers, having a total combined circulation of forty million and a readership of ninety million people.

### *Financial Management Activities*

Improvement of accounting and reporting systems continued as a high priority during the past year. Development of an integrated personnel/payroll system was begun, and a new procurement/payable information system entered the initial implementation stage. Emphasis was placed on reducing the number of funds to provide more efficient funds control. In addition, a complete review of all endowment funds was undertaken to ensure correct classification and use. Efforts to improve cash flow have resulted in more timely deposits of cash receipts and more efficient payment cycling, thereby enabling a reduction in early payments and an increase in cash discounts. A substantial contribution to the effective management of the business affairs of both central and bureau revenue-producing activities was realized with the issuance of the first two chapters of a financial management handbook for the auxiliary activities.

Risk management studies that identify and analyze the potential for financial loss were conducted in the following areas: preserva-

tion and protection of color transparencies used in our publishing operations, transportation of sold goods, liabilities arising out of radio programming and record publishing activities, retail sales to the public, and museum checkroom responsibilities. Consolidation of property insurance exposures into one contract has resulted in significant savings to the Institution.

Despite unfavorable economic conditions and reduced museum attendance, sales through the museum shops and mail order catalogues recorded an impressive increase of 18 percent over-all. A major factor in this growth continues to be the pleasing and distinctive museum shop displays, which this past year won eight awards in the International Display Competition sponsored by *Visual Merchandising* magazine. In addition, a summer catalogue initiated this past year on a trial basis met with exceptional success. Major emphasis was continued on insuring the relatedness to Smithsonian collections and activities of all products sold in the shops or through the catalogues.

With the inauguration of paid parking for Smithsonian employees, a new operation was established under the Business Management Office to manage the parking program. Administration of this program includes not only all employee parking but also the public garage located under the National Air and Space Museum which was formerly operated under a concession arrangement.

The Belmont Conference Center, which since 1967 has served as a setting for small conferences generally of a scholarly, nonprofit, or governmental nature, has continued to require an operating subsidy despite increased usage and stringent budgeting. With the approval of the Board of Regents, sale of this property to a suitable buyer is being pursued.

### *Smithsonian Institution Women's Council Activities*

Entering its second year, during the 1980–81 term, the Smithsonian Institution Women's Council (siwc) sponsored a training session for all employees, focusing on career development. siwc also participated in two training days to improve its contributions to



Smithsonian employees and to set goals for 1980–81. As a result, siwc now publishes a bimonthly newsletter to keep the staff abreast of noteworthy issues and programs. A child-care task force has surveyed all employees and is preparing a feasibility study for the creation of a self-supporting Smithsonian-sponsored child-care facility. To assist the Institution in placing women in key positions, the council presents the names of prominent women qualified for various positions as these become available. During the year the council also hosted a Smithsonian Day for the National Conference of Federally Employed Women, and several members of the council participated in national conferences held in Washington which addressed work-related topics. / At the beginning of 1980, siwc sponsored a reception to pay tribute to Mrs. Dorothy Rosenberg upon her retirement, after thirty years of federal service, twenty-one of them at the Smithsonian.



On a Smithsonian National Associate study voyage through Scandinavia, tour members saw at close range part of Jostedal Glacier, near Olden, Norway.

## MEMBERSHIP AND DEVELOPMENT

JAMES MCK. SYMINGTON,  
DIRECTOR

### *Office of Development*

The principal efforts of the office have been directed toward the Quadrangle development, a major construction project incorporating a new home for the Museum of African Art, a center for Eastern art, a classroom complex and offices for the Associate programs, office and exhibition space for the Smithsonian Institution Traveling Exhibition Service, and the Smithsonian Rare Book Library. The project, to be situated south of the Castle building on the National Mall, will cost approximately \$50 million when completed in 1985. Funding is being sought from both public and private sources, including foreign governments and corporations, United States corporations and foundations, and congressional appropriations. In 1980, the government of Japan, through the Japan Foundation, made a very generous contribution of \$1,000,000 for the center for Eastern art.

Another new area of concentration has been the program of deferred gifts from individuals, through the Pooled-Income Fund. The office has continued to assist Smithsonian bureaux in securing private funding for exhibitions, research, education and other public programs, and publications. This year approximately fifty projects for eighteen of the museums and other bureaux of the Institution were presented to corporations, foundations, and individuals.

### *National Board of the Smithsonian Associates*

Under the leadership of Chairman William S. Anderson, board chairman of NCR Corporation, the board has accepted the major



responsibility of a capital campaign for the Quadrangle project among United States corporations, to match contributions being sought from foreign businesses for the center for Eastern art. This is the first campaign of this magnitude ever attempted by the board and follows its successful efforts to establish the James Smithsonian Society during the past four years.

New members elected in 1980 include John F. Harrigan; Mrs. Henry L. Hillman; Samuel C. Johnson; Seymour H. Knox III; H. Smith Richardson, Jr.; Mrs. E. Hadley Stuart, Jr.; Parke Wright. Board meetings occurred in Washington in the autumn of 1979 and in Seattle in the spring of 1980.

### *Women's Committee of the Smithsonian Associates*

After unanticipated delays, bids have been accepted by the Smithsonian for construction of a sense-aware horticultural area, or Sensory Garden, between the Hirshhorn Museum and the Arts and Industries Building. Major funding for this project was obtained through the efforts of the Women's Committee. The committee also gave financial assistance to a number of Smithsonian activities, including the following: public programs organized for the exhibition *The American Renaissance* at the National Collection of Fine Arts; the Visitor Information Center's publishing of a handbook for the Smithsonian volunteers; the National Museum of History and Technology's purchase of a collection of suffragette items; provision of projectors at the National Zoological Park; a special naturalization ceremony at the Division of Performing Arts' July Fourth celebration; the Museum of Natural History's Naturalist Center; the Hirshhorn Museum's "Hirshhorn Holiday"; the Renwick's lecture series on "Master Craftsmen"; and the Resident Associate Free Film Series.

### *Smithsonian National Associate Program*

In Secretary Ripley's words, an Associate has "joined a special community . . . [and] become part of a rigorous educational and

cultural force everywhere in the land."<sup>1</sup> This national dynamism was observed again and again in 1980 as Associates participated in activities planned for members and as the Institution continued to expand its commitment to public education and scholarship through membership programs.

Since 1970 and the appearance of *Smithsonian* magazine, programs have been developed that allow active participation in the life of the Smithsonian without regard to geographical location. The National Associate Program includes: Contributing Membership, Regional Events, Selected Studies, and the Travel Program. These programs are dedicated to the propositions that learning should be an enjoyable lifelong pursuit for everyone and that the national museums and research organizations of the Smithsonian Institution can make a valuable contribution to this learning process.

#### CONTRIBUTING MEMBERSHIP PROGRAM

The 10,600 Contributing Members of the Smithsonian National Associate Program gave \$870,000 in unrestricted funds during fiscal year 1980. Members continued to reaffirm their special commitment to the Smithsonian by renewing at a rate of 80 percent, thus insuring a dependable income for educational and research projects.

The levels of annual support offered to Smithsonian Associates are: Supporting (\$50); Donor (\$100); Sponsoring (\$250); Sustaining (\$500); and James Smithson Society (\$1,000 and above).

The Contributing Membership Program sponsored eleven special events including the Portrait Ball in the National Portrait Gallery's Great Hall; a formal opening reception for *The Decade of Discovery* exhibition at the Freer Gallery; and private film viewings of *The Louvre Museum* and *The Hakone Open-Air Museum*, in cosponsorship with the French and Japanese embassies and the Fuji-Sanko Group. Sponsoring Members (\$250) had the rare opportunity of touring the Dibner Library with Dr. Bern Dibner, donor of the collection.

The Smithson Society reached a total membership of 341 in 1980, with 166 Annual and 175 Life members. In four years, the Annual

<sup>1</sup> *Smithsonian*, September 1976, page 6.

members have given more than half a million dollars in unrestricted contributions to the Institution. Some \$200,000 of this sum was contributed in 1980 and has made possible five acquisitions and three special projects. The Freer Gallery of Art acquired a fifteenth-century wooden drum core of the Muromachi period; the Museum of African Art purchased a Tikar Bangwa ancestor figure; the National Air and Space Museum added *Bader Bail-Out* by Frank Wooten to its collection of paintings; the Cooper-Hewitt Museum acquired an important silver salver by Dorothy Grant (seventeenth century); and the National Portrait Gallery bought a self-portrait by *Samuel F. B. Morse* (ca. 1814). An exhibition on the startling biological discoveries in the Galapagos was funded at the National Museum of Natural History, as well as performances of the Little Theatre of the Deaf at the Division of Performing Arts to coincide with the International Year of Disabled Persons. Finally, the sum of \$40,000 was pledged toward the Quadrangle project.

The fifty-five new Life members contributed more than \$5 million in objects for the Smithsonian collections and in monetary gifts in 1980. Acquisitions included gems and minerals, sculpture and paintings, prints and drawings, examples of the decorative arts, machinery and medical artifacts, papers relating to United States business and engineering history, among others; particularly notable was the Vincent Melzac collection of American art acquired by the National Collection of Fine Arts. Nine Life members made second gifts to the Institution in 1980. In all, Life members have given objects valued at more than \$20 million since 1977. The Smithsonian Institution acknowledges with gratitude the generous support of the members of the James Smithson Society and the Contributing Membership Program, whose names are given in the appendix.

Contributing Members living outside of the Washington area received advance information and complimentary tickets to offerings of the Regional Events Program in seven major cities throughout the United States.

#### REGIONAL EVENTS PROGRAM

New educational topics, collaborative programming, expanded membership services, and enhanced public awareness highlighted the Regional Events Program in 1980. More than 90,000 Associates



and 80,000 members of fifty-six cosponsoring organizations were invited to attend 162 events in this year's host cities: Miami, West Palm Beach, San Antonio, Des Moines, Grand Rapids, Saint Louis, Anchorage, Fairbanks, and Honolulu.

Lectures, seminars, and family events offered for the first time included "Enduring Images: Three Centuries of American Portraiture," by Marvin Sadik (NPG), "America's New Women," by Margaret Christman (NPG), "Behind the Scenes at the National Air and Space Museum," by Melvin Zisfein (NASM), "The Search for Extraterrestrial Intelligence," by Kerry Joels (NASM), and "Monumental Sculpture," by Edward Lawson (HMSG). Paul Desautels (NMNH) lectured on "Gold: The Everlasting Metal," and joined James Buckler (Office of Horticulture) for a dialogue on their recent orchid-collecting expedition to Panama. Seminars on gem collecting, the art of biographical writing, and the connoisseurship of miniatures provided members with small-group, in-depth educational experiences.

The Regional Events Program collaborated with cosponsors in host cities to develop programs specifically tailored to local interests. The events in Alaska featured presentations by William Fitzhugh (NMNH) on the Smithsonian's early explorations in the Far North and by Henry Collins (NMNH) on his landmark archeological excavations on Saint Lawrence Island, 1928–36. Margery Gordon (NCFA) introduced families to native Alaskan art through improvisational drama and construction techniques, and Richard Fiske (NMNH) lectured on plate tectonics in Alaska and Hawaii, emphasizing the volcanic origins of the forty-ninth and fiftieth states. The return trip to Hawaii, held in conjunction with the East-West Center's twentieth anniversary year, also featured photographic field trips by Kjell Sandved (NMNH) which emphasized techniques for photographing the Islands' rich flora.

Cosponsors enhanced the Smithsonian events in a variety of ways. The Grand Rapids Public Museum offered preview tours of a new exhibition on the prehistory of the Grand Valley following Bruce Smith's (NMNH) lecture on "Temple Mound Builders." Cosponsoring organizations in Miami and Saint Louis organized behind-the-scenes tours of their facilities in conjunction with Smithsonian events. The Historical Association of Southern Florida supplemented a Smithsonian-sponsored day-long professional

seminar with sessions on traveling exhibitions, collections management, and restoration. Participation in the professional seminars drew more than two hundred museum personnel from throughout the states of Texas and Florida.

Membership services were upgraded by the introduction of computerized ticket processing in Washington, D.C. A toll-free number, also installed in 1980, enabled members to call Washington directly with questions regarding programs and ticket requests. Special invitational packets, including complimentary tickets to all lectures, were mailed to Contributing Members in 1980 host cities as well as special friends of the Smithsonian and cosponsoring organizations. In addition, information packets for participants planning visits to the Smithsonian were sent to more than 900 Associates and local members with the help of the Associates' Reception Center. Acknowledging the need for services for the handicapped, the Regional Events Program offered oral and American sign language interpretation to hearing-impaired participants.

Public awareness of the Smithsonian programs in host communities and of the Institution's wide-ranging research activities was heightened through the expanded range of cosponsoring organizations, through events in cities with lower population densities, and through more extensive media coverage. The basis for participation was broadened by extending opportunities beyond museums to state and local agencies, including the State Library Commission of Iowa, the Saint Louis County Department of Parks and Recreation, and the Dade County Council of Arts and Sciences in Florida. Programs once limited to major metropolitan areas were offered in less populated cities with an experimental concurrent event series in Miami and West Palm Beach.

Intensified public relations efforts yielded forty-three major news articles highlighting the events series, including many on-site reviews of lectures, seminars, and workshops. Smithsonian lectures also appeared on thirty live prime-time radio and television talk shows. Representatives of local host organizations appeared frequently with their Smithsonian guests, giving local organizations spotlight coverage of their own exhibitions and programs. The additional publicity brought many new faces into the museums from rarely touched segments of the public, and prompted a new interest in local museum membership.



#### SELECTED STUDIES PROGRAM

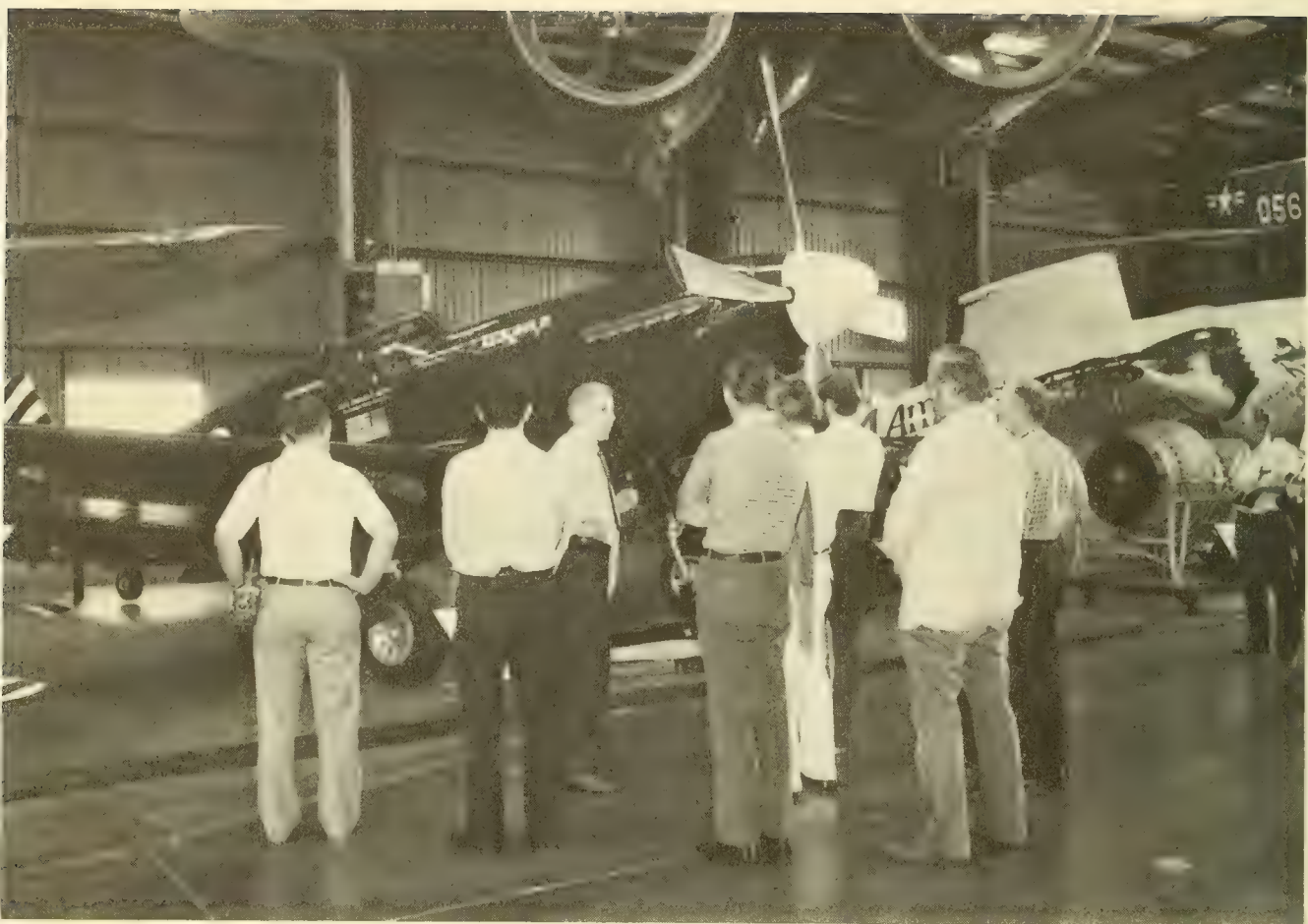
1980 was the Selected Studies Program's most extensive year of operation in its three-year history, with sixteen five-day seminars offered from October through June. Continuing to draw upon the collections and expert staff of the Smithsonian Institution, visiting scholars, and other scientific and cultural organizations in the Washington area, the programs combined illustrated lectures, films, behind-the-scenes tours, and field trips to offer Smithsonian National Associates comprehensive courses in a wide variety of topics.

As a result of the large demand generated by previous years' offerings and the necessity of limiting enrollment in order to maintain a personal, "seminar" atmosphere, many of the most popular subjects were repeated this year—including "Connoisseurship of American Antique Furniture, 1650–1840," "Genealogical Research: How To," "Historic House Preservation," "China: A Cultural History," which greater numbers of Associates are taking in preparation for immediate trips to China, rather than for general interest, and "Historic Horticulture," which is conducted annually at the height of Washington's spring blooming.

Several new programs were designed to complement special exhibitions, including "The Arts of Imperial Russia" in conjunction with the show of that same title in the Renwick Gallery in October. "The New Eden: American Painting in the Nineteenth Century" explored the masterpieces of American artists in lectures and daily gallery tours in the numerous Washington art museums such as the National Gallery of Art, the National Collection of Fine Arts, the National Portrait Gallery, the Renwick Gallery, The Phillips Collection, and the Corcoran Gallery of Art. The special exhibition on luminism at the National Gallery of Art was an outstanding addition to the week's studies. New information resulting from several National Aeronautics and Space Administration missions provided the latest updated material for "A Grand Tour of the Solar System" in March.

Despite the greatly increased airfares, participants continued to show a wide geographical distribution with large numbers still coming from as far away as California and Texas. Nineteen eighty also witnessed a growing number of Selected Studies "repeaters" or "regulars," with many people who registered for two and three seminars and indicated their plans to attend on an annual basis.





A special tour on aircraft restoration at the Paul E. Garber Facility was part of the SNAP Selected Studies Program. *Below.* Sea lions were sighted on Fernandina Island in the Galapagos on a study tour sponsored by Associates Travel, Smithsonian National Associate Program.



Fully one-third of the people registered for the "American Painting" seminar in March had participated in "French Impressionist Painting" the previous spring.

In addition to the monthly Selected Studies announcement in *Smithsonian* magazine, such specialized publications as *Flying Magazine*, *AOPA Pilot*, *Sport Aviation*, *Antiques Magazine*, *Antiques Monthly*, *Asia Mail*, and *Preservation News* have begun to print frequent notices of these seminars.

#### TRAVEL PROGRAM

Nineteen eighty was a very successful year in spite of considerable upheaval in travel conditions stemming from inflation, fuel costs, and general uneasiness in the economy. The National Associate Travel Program continues to design and administer a variety of unique educational tours that mirror the interests and concerns of the Smithsonian Institution. All study tours departed as scheduled, although enrollment for some foreign tours was lower than originally projected. A wider range of destinations was offered in 1980. They included outdoor, wildlife oriented programs in the mountains of Chile and on the Galapagos Islands. Two-week residential programs took place at Oxford University, Aigas Field Center in the Highlands of Scotland, and in Kyoto, Japan.

On study voyages around the British Isles and to the Baltic countries, Associates learned of the influence of the sea on the historic and cultural development of these areas. On a third voyage, archeology of the Middle East was highlighted during a program which included visits to Egypt, Jordan, Israel, and Greece. Following an intensive predeparture program in San Francisco, nine study groups visited the People's Republic of China. Thirteen subsequent programs in different areas of China will provide Associates with exciting new study opportunities there.

On the domestic scene, Associates took part in cultural programs in Asheville, Charleston, Savannah, New Orleans, and New York. Natural history studies were held in cooperation with the Newfound Harbor Marine Institute, the Tetons Science School, and Wilderness Southeast, while other programs were accompanied by Museum of Natural History staff to study whales off Baja, coral reefs of the Virgin Islands, and geology in the Grand Canyon.

The educational content of both the foreign and domestic study



tours is intensified by the study leader. Each trip is led by one or more Smithsonian or guest scholars as well as Smithsonian staff representatives.

Associates from all parts of the country visited the nation's capital through the "Washington Anytime Weekend" program, executed in cooperation with the Visitor Information and Associates' Reception Center, or by taking part in the "Smithsonian Sampler Weekend" designed to present a sampling of the Institution's collections with lectures by curators and other museum staff.

An automated data-processing system was installed during the year which enables the collection of names and addresses of Associates who have requested material, and the recording of inquiries by tour. The program is currently expanding to allow trip registration, invoicing, and mail addresses to be handled through the computer terminal.

### *Smithsonian Resident Associate Program*

The Smithsonian Resident Associate Program, the private, self-supporting membership and continuing education arm of the Smithsonian Institution for Metropolitan Washington, D.C., is considered a model for museum membership and education programs both nationally and internationally. Established in 1965 by Secretary Ripley to provide opportunities for those who live in the Washington area to participate actively in the life of the Smithsonian, the program offers a broad range of quality educational activities that complement and enhance the exhibitions, collections, and research of the Institution.

Resident Associates are drawn from the entire spectrum of the greater Washington community. Membership has grown from 8,000 with a retention rate of 50 percent in 1972 to over 60,000 and a retention rate of 80 percent in 1980, representing more than 130,000 persons in the greater Washington area. The dues of these single, double, and family members amounted to \$1,290,400 in fiscal year 1980. During the year the program offered 917 activities, attended by 150,721 individuals, a 15 percent increase in participation over the previous year.



### INTERNATIONAL ACTIVITIES

The Resident Associate Program was selected by the National Endowment for the Arts / National Endowment for the Humanities for the third consecutive year to serve as one of the national sponsors of an international symposium. The fourth in an ongoing series, *Belgium Today* marked the commemoration of the 150th anniversary of Belgian independence and was made possible by grants from the two endowments, with the cooperation of the government of Belgium, and outside funding. His Majesty King Baudouin I of the Belgians and Queen Fabiola opened the symposium in Washington in April 1980. The next international symposium, *Egypt Today*, is in the planning stage, scheduled for spring 1981, and the Resident Associate Program staff is already at work on this project, again as one of three national sponsors. For these international symposia, the program receives financial grants from external sources.

### CIVIC COMMITMENT AND CONSORTIA

The Resident Associate Program has become a cultural force in the life of the Washington community and the country at large. The program regularly initiates or cosponsors with local and national institutions activities that address important current issues and are open to the public as well as members.

This year, through a grant from the National Science Foundation's Public Understanding of Science Program—the fourth in four years—the Resident Associate Program cosponsored with the University of the District of Columbia "Future Power," a seven-week series of free public lectures by nationally known energy experts, keyed by Harvard's Daniel Yergin, coeditor of the best-selling *Energy Future*. The series considered the problems and possibilities of the nation's energy alternatives.

In cooperation with the National Trust for Historic Preservation, the program presented an all-day symposium, *Preservation: Reusing America's Energy*, that examined how preservation of the built environment saves energy. Through a grant from the German Marshall Fund, the program cosponsored with Partners for Livable Places a symposium that considered how America can learn from Europe in the field of design and management of public spaces. In conjunction with the Washington Metropolitan Chapter of the



King Baudouin I of the Belgians delivered the keynote address opening the *Belgium Today* symposium sponsored in part by the Smithsonian Resident Associate Program with support from the National Endowment for the Arts and the National Endowment for the Humanities, among others. Chief representatives of sponsoring groups are shown here, along with a capacity audience. *Below.* Hollywood costume designer Edith Head (with dark glasses) posed with models wearing her historic creations in a fashion show for the Resident Associate course "Beyond Fashion: Costumes for Stage and Life."





American Institute of Architects, the program presented a lecture by world class architect Arthur Erickson of Canada, and a series of lectures by key Austrian architects on Viennese architecture. The popular Audubon lecture series, cosponsored with the Audubon Naturalist Society and the Friends of the National Zoo for the seventh consecutive year, focused on endangered wildlife—from the whale to the whooping crane.

Two graphic design courses, taught by leaders in the field, were cosponsored with the Art Directors Club of Metropolitan Washington. In observance of Black History Month (February), the program presented a series of landmark films produced by and about blacks over the past fifty years. As has been the practice of the program for the last eight years, tuition-free scholarships are awarded to inner-city young people and adults to attend courses of their choice. Through the D.C. Public School System, one hundred young people received tuition-free scholarships to Young Associate classes, and sixty-six scholarships were awarded to adults for Resident Associate courses. The program also extended eighty-three tuition-free scholarships for adult courses to gifted students attending the Ellington School for the Arts, the Gifted and Talented Program, and the School Without Walls. In addition, the program awarded seventy scholarships for adult courses to Smithsonian docents.

The Resident Associate Program commissioned Washington artist Gene Davis to create a serigraph/poster series in his dazzling multicolor-stripe style, and offered the art works for sale, discounted to members. The project, an aesthetic and financial success, has generated funds for the Institution, and some of the proceeds will benefit the Smithsonian's Sensory Garden.

*The Smithsonian Associate*, the program's monthly newsletter, won the 1980 Metropolitan Area Mass Media (MAMM) award from the American Association of University Women for the best locally produced educational publication, the second such award in two years.

#### SMITHSONIAN COOPERATION

Throughout the year, the Resident Associate Program continued to work cooperatively with all of the Smithsonian museums and other bureaux on projects that heighten knowledge and appreciation of exhibitions, curatorial research, and special activities. Mem-



ber openings were held in conjunction with the exhibitions *After the Crash* and *Sculpture of the Federal Triangle* at the National Collection of Fine Arts, and the *Miró: Selected Paintings* show at the Hirshhorn Museum and Sculpture Garden. To complement the Miró exhibition, the program presented a lecture about the artist by distinguished art critic Rosamond Bernier. The program co-sponsored two all-day seminars with the National Collection of Fine Arts on patronage during the American Renaissance and art in Washington during the nineteenth and early twentieth centuries. Museum directors Roger Kennedy of the National Museum of History and Technology, Marvin Sadik of the National Portrait Gallery, and Warren Robbins of the Museum of African Art lectured for the program during the year. In conjunction with the Museum of History and Technology's holiday celebrations at Christmas and July Fourth, the program presented two free films, each shown on four consecutive days and open to the public. At the initiative of the program, planning meetings continue to be held quarterly with key curators of Smithsonian museums and the programming staffs of the Resident Associate Program, the National Associate Program, and the Division of Performing Arts. *The Smithsonian Associate* newsletter provided a medium for the public announcements of the Smithsonian community—Smithsonian Institution Press books, National Air and Space Museum programs, Museum Shops products, Museum of Natural History films, and Division of Performing Arts activities. The Resident Associate membership list was lent regularly to many bureaux and divisions to publicize their activities and sell their products, with gratifying results.

*SPECIAL EVENTS: FILMS, SEMINARS, SYMPOSIA,  
LECTURES, PERFORMING ARTS*

Each month, between fifteen and twenty special events were scheduled—lectures, films, performing arts, seminars, and symposia. Distinguished Smithsonian and guest lecturers discussed current cultural topics. Film series were held regularly to complement Smithsonian exhibitions and activities; brunch and outdoor concerts are a regular feature. During fiscal year 1980, 204 such events took place, attended by 61,894 people, a 9.5 percent increase over fiscal year 1979.

## Films

Individual screenings of *The Louvre Museum*, produced by the Japanese Fuji Telecasting Company, Ltd., *Koko, A Talking Gorilla*, a documentary that records the ability of a gorilla to learn human sign language, and *Nomads of the Deep* on IMAX, with its spectacular views of underwater life, were among the year's highlights. Series exploring American films of the Depression Era and the 1950s, as well as recent and classic Belgian films, presented in conjunction with the *Belgium Today* celebration, were also shown to large audiences. All films are introduced by a scholar in the field. In fiscal year 1980, the Free Film Theater, a weekly series of documentaries open to the public, was placed under the aegis of the Resident Associate Program. More than thirty-five films were offered during the year, October through June, attended by over 10,000 people.

## Seminars and Symposia

Intensive all-day seminars and symposia exploring such topics as the art and architecture of ancient Greece, the art of Daumier, the UFO mystery, and the art of the garden constituted an expanding component of the program.

## Lectures

Science fiction writer Ray Bradbury, art critic Clement Greenberg, anthropologist Marvin Harris, author and historian Alfred Kazin, photographer Eliot Porter, and Bloomsbury biographer Quentin Bell were among the year's notable speakers. Members also heard lectures on the Post-Impressionists, Irish castles, Saturn and the Pioneer II probe, King Arthur and the Knights of the Round Table, Van Gogh, and Picasso—all given by noted specialists.

## Performing Arts

Winter brunch concerts are planned annually; this year pianist John Eaton's popular song series was scheduled twice during the year to meet demand. Summer outdoor concerts in the NCFR/NPG courtyard featured outstanding local jazz, brass, and bluegrass groups. Special highlights of the year included the performance of *Quarantine* by Le Plan K, the internationally acclaimed Belgian

theater company; a concert by a Belgian brass quintet; and a performance by the Cairo Conservatoire Chamber Orchestra, presented in cooperation with the Embassy of Egypt.

#### *ADULT COURSES*

The Adult Courses Office offers a broad-ranged curriculum in the arts, sciences, and humanities that provides opportunities for serious study with distinguished Smithsonian and visiting experts. In fiscal year 1980 a program of "Courses at Noon" was instituted in addition to those regularly scheduled in the evenings. Owing to the inadequate classroom space available for noontime classes at the Institution, the program rented classroom sites in midtown centers around Dupont Circle for many of these courses. This new format contributed greatly to the increase of 21 percent in course enrollment over the previous year—7,793 students attended the 173 lecture courses offered in four terms. The best-attended courses, attracting as many as 350 persons, covered subjects as varied as the urban predicament, classical music, costume design, modern photography, the art of the cartoon, graphic design, and the art of the Oriental rug. Outstanding lecturers included costume designer Edith Head, cartoonists George Booth and Edward Koren, and graphic designer Milton Glaser.

#### *STUDIO ARTS*

The objective of the studio arts component of the program is to engender an appreciation of age-old crafts by keeping alive hands-on techniques that are rapidly disappearing from our modern world. Drawing upon the rich resources of the Smithsonian museums, classes and workshops are frequently planned to complement exhibitions. Studio arts classes were offered four terms per year; in addition, a special September mini-term and intensive summer master workshops provided opportunities to focus on more narrowly defined studio experiences. Subjects explored in these 182 programs, attended by 2,757 persons in fiscal year 1980, included Chinese calligraphy, marbling, bookbinding, weathervane making, furniture restoration, portrait drawing, and stained glass design. To improve facilities for photography courses, the Resident Associate photographic laboratory was modernized during the year. An en-



larger, timer, and dry-mounting press were purchased and the print washing area was refurbished.

### *TOURS*

On-site learning experiences are offered in art, architecture, archeology, history, and science at the Smithsonian and complementary cultural facilities. Ranging in length from one hour to two days, tours are geared to appeal to all age groups and interests. From an overnight excursion to visit magnificent mansions along the Hudson River to hour-long trips through Washington's Old Post Office, 273 tours with 602 different sections were held during fiscal year 1980; 32,277 persons participated in these tours, an increase of over 50 percent from last year. During fiscal year 1980 there was a substantial increase in one-day trips to locations over 200 miles from Washington.

### *YOUNG ASSOCIATE AND FAMILY ACTIVITIES*

Through Young Associate and Family Activities, children ages 3 to 15, alone or with their families, can further their enjoyment of the Smithsonian's vast resources. Programs specially tailored to their ages and interests include classes, workshops, monthly free films for families, tours, and performances that explore topics in history, art, sciences, and studio arts. During fiscal year 1980, a major emphasis was placed on increasing offerings for parent-child couples, enabling them to work cooperatively on gardening, birding, miniature dollhouse construction, magic, and super 8 mm movie-making. Special programming for youngsters three to five was initiated on Tuesdays, consisting of a morning art class and an afternoon parent-child class. In addition to two weeks of daily summer classes, weekend courses and events were offered for the first time during June, July, and August, with enthusiastic attendance.

### *VOLUNTEERS*

Over 450 volunteers provided invaluable assistance to the Resident Associate Program monitoring special events, lectures, courses, and tours, and performing vital office duties. The 80 volunteer office workers represent the equivalent of six full-time staff members; the 378 monitors worked the equivalent of five full-time employees.

## PUBLIC INFORMATION

LAWRENCE E. TAYLOR,  
COORDINATOR

### *Office of Public Affairs*

Although millions of people visit the Smithsonian every year, millions more never have an opportunity to participate in the great variety of its activities. As an outgrowth of existing public outreach programs, the Office of Public Affairs launched a free, monthly feature story service for daily and weekly newspapers—the Smithsonian News Service.

The features take the reader behind the scenes at the Smithsonian, describing the process and benefits of Smithsonian research. Since its inception in October 1979, the Smithsonian News Service has been received enthusiastically by editors at both large and small daily and weekly newspapers in all fifty states. Well over 1,400 newspapers, having a total combined circulation of forty million and a readership of ninety million, use the news service features.

During its inaugural year, the service distributed forty-nine stories, many with photographs and illustrations, on such topics as the presidential elections, coral reef research, contemporary art, tropical biology, oceanliners, women aviators, Fourth of July traditions, Christmas customs, ants, astronomy, prehistoric Indians, Oriental art, animal communication, the Archives of American Art, and the American Renaissance. A key element of the Smithsonian News Service success has been the cooperation of the Institution's scholars and scientists, both as sources for stories and as reviewers of the finished products. The eclectic assortment of stories mirrors the richness and diversity of Smithsonian art, history, and scientific activities now being shared with millions of people throughout the United States.

As foreign visitors flocked to the United States in record numbers, attracted by favorable currency exchange rates, the Office of Public Affairs published editions of its general information *Welcome* brochure in German, French, Spanish, and Japanese. The publications are the only free, printed materials in foreign languages currently available about the Smithsonian.

Print and braille editions of *A Guide to the Smithsonian for Disabled People* were published early in 1980. The brochure was written in the Office of Public Affairs, with design and printing costs provided by the President's Committee on Employment of the Handicapped. The committee hopes that the brochure, the first of its kind, will be used as a model by museums and cultural institutions around the country.





Teresa Yenque and Trini Alvarado starred in *Maggie Magalita*, commissioned and produced by Kennedy Center Programs for Children and Youth for the 1980 Imagination Celebration.

## JOHN F. KENNEDY CENTER FOR THE PERFORMING ARTS

ROGER L. STEVENS, CHAIRMAN

AS THE JOHN F. KENNEDY CENTER for the Performing Arts approaches the year in which it will celebrate its first decade as this nation's showcase for the performing arts, its record of artistic, educational, and public service programming documents how well the center has succeeded as a *living* memorial to the late President Kennedy.

From its inception by Act of Congress in 1958 as the national cultural center, the Kennedy Center has focused on broad national participation in the performing arts. Its performance and attendance figures since 1971—more than 9,000 performances, with audiences exceeding fourteen million—underscore the strength of the center's commitment to broad public access to the performing arts.

The center's extraordinary success as a performing arts center has enabled it to attract the substantial private funding necessary to fulfill the cultural mandate set forth for it by the United States Congress:

1. to present classical and contemporary music, opera, dance, and poetry from this and other countries;
2. to present lectures and other programs;
3. to develop programs for children, youth, the elderly, and other age groups;
4. to provide facilities for other civic activities.

The Board of Trustees of the Kennedy Center administers the center's performing arts operation as a separate, independent, and



self-sustaining bureau of the Smithsonian Institution. Operating within the Kennedy Center, but separately administered by their own boards of trustees, are the National Symphony Orchestra, the Washington Opera, the American Film Institute, and the Washington Performing Arts Society. This annual report of the Kennedy Center encompasses the performing arts activities of each of these affiliate organizations.

Once again this past year, the Kennedy Center was the focus of major international events in the performing arts. It served as this country's host for the first American visit of the renowned Vienna State Opera, appearances by the Berlin Ballet, the Peking Opera Theatre, major symphony orchestras from around the world, and the first congress in America of L'Union Internationale de la Marionnette for its 1980 World Puppetry Festival.

The center's primary efforts, however, continued to emphasize expanding its commitment to the performing arts in America—presenting a broad and balanced array of musical, theatrical, dance, film, and public service programming that emphasizes *quality* and this nation's rich cultural diversity.

The first full year of operation of the Terrace Theater has enabled the center to increase significantly the range of performing artists that it can present; this is so because the theater provides access to small groups and talented individuals that could not be accommodated in the center's larger halls for economic or aesthetic reasons. America's only professional touring repertory theater, The Acting Company, became the center's official touring unit and now is scheduled to visit communities large and small across the United States in 1981. Artistic programming of the highest caliber is being shared with increasingly large young audiences: major elements of the National Children's Arts Festival held annually at the Kennedy Center were incorporated in outreach festivals during 1980 in Atlanta, Phoenix, and Seattle.

America's famed Metropolitan Opera paid its first visit to the Kennedy Center Opera House in 1980, initiating an event that is expected to take place annually in the future. And the center launched the first phase of an unprecedented dance series—*Dance America*—featuring appearances by more than a dozen of this country's most innovative contemporary companies on three different Kennedy Center stages.



The emphasis on American themes and artists was represented in the center's theaters with productions ranging from the revival of the Leonard Bernstein / Jerome Robbins musical *West Side Story* to the premiere of Tennessee Williams's new drama, *Clothes for a Summer Hotel*, about the troubled relationship between Scott and Zelda Fitzgerald. New plays by such young playwrights as Tina Howe and Robert Jones were presented in the Eisenhower and Terrace Theaters. Outstanding American dance companies—the Pennsylvania Ballet and Eliot Feld Ballet—made their Kennedy Center debuts in the Opera House while the American Ballet Theatre and the Alvin Ailey American Dance Theater returned for traditional annual engagements.

The Kennedy Center Honors Program, begun only three years ago, has come to be regarded as the highest recognition bestowed on this country's outstanding performing artists. Public awareness of the importance of the performing arts in our cultural life has been heightened by CBS network television broadcasts of gala tributes in the Opera House to each year's Honors recipients. Selected by the Kennedy Center Board of Trustees as Honors recipients for 1980 were Leonard Bernstein, James Cagney, Agnes de Mille, Lynn Fontanne, and Leontyne Price.

The center has consistently sought to help identify and assist young talent through the Young Concert Artists series and such events as the Friedheim and Rockefeller music competitions and play readings. The center's commitment to cultural diversity and access to the performing arts for all ethnic groups was continued during 1980 through such special projects as the National Black Music Colloquium and Competition and a National Black Theater and Playwright Project designed to encourage new playwrights.

Important advisory networks—the Alliance for Arts Education, the National Committee on Cultural Diversity in the Performing Arts, and the presidentially appointed members of the Kennedy Center Board of Trustees and Advisory Committee on the Arts—enable the center to focus on the future of the performing arts across America. As a *living* memorial to the importance of the performing arts in the cultural and intellectual life of our nation, the Kennedy Center now seeks to involve and stimulate broad national audiences far beyond the forty million visitors of all ages who have already passed through its doors.

## *Performing Arts Programming*

During the 1979–80 season, 1,245 performances were presented in the Opera House, Concert Hall, Eisenhower and Terrace Theaters; audience attendance exceeded 1.3 million. In addition, the American Film Institute presented more than seven hundred films to an audience of more than 100,000 people in the American Film Institute Theater at Kennedy Center.

### DRAMA AND MUSICAL COMEDY

During 1979–80, theatergoers attended 735 performances of twenty-three productions. The Eisenhower Theater season featured nine dramatic productions; and a new musical, *Charlie and Algernon*, by David Rogers and Charles Strouse, rounded out the season in a pre-Broadway engagement following its successful premiere earlier in the year in the center's Terrace Theater.

The Terrace Theater offered a wide variety of diverse and innovative programming during its second year of operation, including eight theatrical presentations particularly reflective of this theater's function as an artistic base for younger companies, including The Acting Company, Folger Theater Company, and Goodman Theater. The Terrace Theater season opened with three productions staged by The Acting Company: *Elizabeth I*, directed by Liviu Ciulei; *The White Devil*, directed by Michael Kahn; and *Broadway*, directed by Gerald Gutierrez. Last spring, the Kennedy Center named The Acting Company its official touring unit, thus fulfilling a long-held hope to establish a national theatrical touring company. It is envisioned that The Acting Company will return annually to the Terrace Theater and also expand its national touring to include extended residencies in small and large communities across the country, including Nashville, Birmingham, Fort Lauderdale, Oberlin (Ohio), and Washington (Pennsylvania), during the 1980–81 season.

Completing the 1979–80 theater season were four major musicals, among them Jerome Robbins's restaging of *West Side Story*, the landmark musical by Leonard Bernstein, Stephen Sondheim, and Arthur Laurents which premiered in 1957. Since 1971, some 157 theatrical productions have been presented at the Kennedy Center. Of these, 96 have been produced, coproduced, or made possible by the center itself.

## DANCE

The Kennedy Center's 1979–80 dance season featured six American dance companies and two distinguished foreign troupes to offer 117 performances of widely varying style. Companies of major importance featured during the year included American Ballet Theatre, New York City Ballet, the Eliot Feld Ballet, the Pennsylvania Ballet, the distinguished Berlin Ballet, and the first American tour by the Shanghai Acrobatic Theater of the People's Republic of China. The dance season's showcasing of American companies was highlighted by the announcement of a year-long joint presentation of American dance in 1980–81 by the Kennedy Center and the Washington Performing Arts Society—*Dance America*. The Lar Lubovitch Dance Company and Bill T. Jones initiated the series of twelve engagements. American Ballet Theatre, the Kennedy Center's official company, was forced to cancel its winter engagement at the center because of unresolved labor disputes but the company did appear for a three-week spring engagement as part of a national tour celebrating Ballet Theatre's fortieth anniversary season. Highlights included a gala anniversary evening featuring Natalia Makarova, Martine van Hamel, Anthony Dowell, and Alexander Godunov. During the year folk dance troupes from Mexico, Czechoslovakia, Palestine, and Trinidad appeared under sponsorship of the Washington Performing Arts Society.

## MUSIC

Two major operatic events highlighted Kennedy Center's 1979–80 musical season, and a calendar of 362 performances featured young artists, new works, popular, jazz, and gospel music, as well as concerts by major symphony orchestras and recital artists from around the world. The musical programming presented by the Kennedy Center, the National Symphony, associated organizations, and independent producers included 171 symphony concerts, 48 opera performances, 58 recitals, 20 choral concerts, 29 concerts of chamber music, and 36 concerts by popular, folk, and jazz artists.

With the assistance of a generous grant from the Austrian government and further support provided by the Morris and Gwendolyn Cafritz Foundation and IBM Corporation, the Kennedy Center presented the first American engagement of the renowned Vienna



State Opera. The Metropolitan Opera appeared for the first time at the Kennedy Center in a one-week engagement that offered six different works. In a quite different but equally dramatic tradition, the Peking Opera from the People's Republic of China made its first appearance in Washington bringing eight repertory pieces that combined acting, singing, acrobatics, the martial arts, music, and spectacle.

The National Symphony Orchestra, administered as an affiliate of the Kennedy Center by its own board of directors, presented 134 concerts in the center's Concert Hall, including an extensive program of school Youth and Family concerts. The renowned Philadelphia Orchestra returned for its series of Monday evening performances and the Washington Performing Arts Society presented engagements by leading orchestras from the United States and around the world including the Dresden and Moscow State Orchestras, the New York Philharmonic, the Boston Symphony, and the Cleveland Orchestra.

The addition of the Terrace Theater to the center's facilities provided an intimate recital hall appropriate for the presentation of less-established musical artists, as well as young companies of actors and dancers. The Young Concert Artist Series and a concert series by the center's resident chamber ensemble, the Theater Chamber Players, highlighted the Terrace Theater's musical programming.

Major musical competitions held during the past year and sponsored by the Kennedy Center further demonstrated the center's emphasis on the encouragement of younger artists and the exploration of unfamiliar American repertory.

The Kennedy Center / Rockefeller Foundation International Competition was established to stimulate the interest of performers, teachers, and students in the largely unexplored repertory of music written by American composers in this century. The competitions are funded by a grant from the Rockefeller Foundation and winners receive substantial cash awards, in addition to concert and recording contracts for the First Place performer.

A more specialized area of the musical repertory was the focus of the National Black Music Colloquium and Competition held around the country and culminating at the Kennedy Center during January, 1980, with a full week of master classes, workshops, symposia, and public recitals. These events capped a two-year effort by

the Kennedy Center to recognize black participation in the field of classical music, to identify and assist talented young artists across America, and to encourage the performance of works by America's black composers.

The Kennedy Center / Friedheim Awards were established specifically to recognize outstanding American composers of chamber and symphonic music. The Friedheim Awards honor the late Arthur Friedheim, distinguished pianist and pupil of Franz Liszt and Anton Rubinstein, and are supported by a grant from the Eric Friedheim Foundation.

#### FILM

Since its opening in April 1973, the American Film Institute (AFI) Theater has shown more than five thousand motion pictures to an estimated audience of almost three-quarters of a million people. Programming selections have reflected the entire span of the development of film as art and industry. Many selections, particularly of pre-1972 motion pictures, are made possible for audience viewing only by virtue of AFI's film preservation program.

Among the series presented during the 1980 calendar year were tributes to producers David O. Selznick and Howard Hughes, directors Preston Sturges and Frederick Wiseman, writer Raymond Chandler, and stars James Stewart, Claudette Colbert, Spencer Tracy, and Laurence Olivier. In an ongoing survey of world cinema, the AFI Theater presented new and/or classic films from Spain, Norway, West Germany, and Japan. Theme-oriented programming included Films That Got Away, oft-requested films from Our First Decade, Great Opera on Film, The Native American Image on Film, numerous programs of documentaries and independent films, films from AFI's own archives, Films and Fantasy, Musical Theater and Film, MGM Musicals, a series devoted to classic American films, and a nostalgic collection of films about the education experience.

#### *Public Service Programming*

Under Section 4 of its authorizing legislation, signed by President Dwight Eisenhower in 1958, the Kennedy Center is charged by Congress with wide-ranging responsibilities for performing arts,

public service, and education programming. During the past year, the Kennedy Center allocated more than \$2 million raised from private sources—principally the Kennedy Center Corporate Fund and private foundations—to carry out programming mandated by Congress and to provide broad public access to the center and its activities. Private funding contributed significantly to extensive programming for young audiences at the center and around the country and made possible a calendar of free events throughout the year, including symposia, lectures, theater and musical performances, and exhibitions.

During the past year, 478 free public service events were presented at Kennedy Center, of which 415 were sponsored by the center itself and 63 by associated and public service organizations. Audience attendance for these events totalled 196,525.

The Terrace Theater complex at Kennedy Center, which also includes the center's Performing Arts Library, Theatre Lab, and Education Department, has enabled the Kennedy Center to extend its national outreach as a cultural center by providing a showcase for small music, dance, and theater groups from around the country. Major support from the Kennedy Center Corporate Fund has helped to insure access to the Terrace Theater by performing groups with limited financial resources. During its first year of operation, more than four hundred performances by seventy-seven different performing groups were featured. Two major components of the center's Education Program—Programs for Children and Youth and the American College Theatre Festival—are resident in the Terrace Theater.

The center's 1979 Holiday Festival presented twenty-two free and low-admission events for all age groups. Highlights of the festival included the *Messiah Sing-Along*, Grand Foyer free concerts that drew audiences of over ten thousand, and what has become a New Year's Eve tradition, *A Night in Old Vienna*.

The Mobil Oil Corporation continued to sponsor its National Town Meeting programs at the Kennedy Center. More than twenty thousand citizens attended live national debates on key issues, while radio audiences around the country participated via National Public Radio. Principal guests included presidential candidate John Anderson, National Security Adviser Zbigniew Brzezinski, and United Nations Secretary General, Kurt Waldheim.



## *Education Programming*

The Kennedy Center's authorizing legislation specifically directed the Board of Trustees to develop programs for children and youth in the performing arts. The Kennedy Center's Education Program was designed toward this end to provide national leadership in the field of arts education and to cooperate with regional performing arts centers and education networks across the country in developing and presenting model performances for young audiences.

To serve these ends, the four components of the Kennedy Center's Education Program are coordinated: the Alliance for Arts Education, the Programs for Children and Youth, the American College Theatre Festival, and Arts Coalition Northwest. Programs for Children and Youth and the American College Theatre Festival present performances for and by young people. The Alliance for Arts Education and Arts Coalition Northwest serve as national and regional networks for the exchange of information and the identification and support of model programs. At both the state and national levels the Kennedy Center Education Program seeks, by identifying and supporting exemplary arts education projects, to promote incorporation of the arts into the education of every child. As part of this commitment, the center works closely with its educational affiliate—the National Committee, Arts for the Handicapped.

### *THE ALLIANCE FOR ARTS EDUCATION*

The Alliance for Arts Education (AAE) is a network composed of fifty-five committees: one in each of fifty states plus representation for the Bureau of Indian Affairs, the District of Columbia, Puerto Rico, Samoa, and the Virgin Islands. The national office, based at Kennedy Center, is responsible for promoting an information exchange among AAE committees, providing technical assistance to the committees and others upon request in the field of arts education, and distributing contract funds provided by the Department of Education for committee activities and services. Each committee (usually composed of representatives from private and public agencies involved in arts education) sets its own goals, objectives, and activities. Most often these activities focus on the committee's role as a forum for state and local advocacy work for arts educa-

tion, for the development and implementation of statewide plans for comprehensive arts education, and for providing consultant services to individuals and organizations conducting arts education programs and projects.

The AAE national director, staff, and five regional chairpersons provided technical assistance and consultation services directly to more than half of the AAE committees during fiscal year 1980. Support contract funds were also provided to forty-seven AAE committees around the country.

#### *PROGRAMS FOR CHILDREN AND YOUTH*

The commitment of the center's Education Program to quality performing arts programming for young people is clearly expressed in the goals of its Programs for Children and Youth: "to support arts education programs in the schools through the medium of performance and to provide a variety of quality performances to student and general audiences." Along with the development and presentation of performances for young people, materials are provided for audiences and teachers to help integrate the performance experience into the student's over-all education.

During 1979–80 the Programs for Children and Youth presented nearly 300 free performances and related events for audiences of more than 150,000 in Washington, D.C., and cities around the country. The Programs for Children and Youth produces a model fall and spring Children's Arts Series at the Kennedy Center, featuring professional artists performing for young people. Performing companies are selected from across the United States and represent the culturally diverse population of our country. Featured groups from the 1979–80 season included AFRI productions of New York City, the Asolo Touring Theater of Florida, Sheffield Ensemble Theater of Biloxi, Mississippi, and the Metro Theater Circus of St. Louis.

Programs for Children and Youth annually presents "Imagination Celebration," a national children's arts festival, at the Kennedy Center, with major elements replicated in similar outreach festivals in selected cities throughout the United States. This program not only provides a model for performing arts festivals for young audiences, but enables the Kennedy Center to contribute to the development of new works, to involve noted artists in performing for young

people, and to serve as a catalyst for the development of programs for young people at performing arts centers throughout the country. Denver, Chicago, Seattle, Atlanta, and Phoenix have mounted "Imagination Celebrations" (Atlanta, Phoenix, and Seattle in the spring of 1980). In the spring of 1981, the cities of Milwaukee, Birmingham, and Seattle will participate. Programs for Children and Youth provides technical assistance and core professional productions for each outreach festival, featuring such well-known artists as Sarah Caldwell, Jacques d'Amboise, and Leon Bibb in performances specifically developed for young audiences.

Programs for Children and Youth was supported during 1979–80 school performing groups visiting the nation's capital. Groups from more than a dozen states gave free performances in the Kennedy Center's Grand Foyer.

Programs for Children and Youth were supported during 1979–80 by the Kennedy Center Corporate Fund, the Department of Education, and grants from the Mobil Foundation, Inc., and the George Preston Marshall Foundation.

#### AMERICAN COLLEGE THEATRE FESTIVAL

The American College Theatre Festival (ACTF) is presented annually by the Kennedy Center, providing national recognition of the efforts of college and university theaters throughout the United States. During the twelfth ACTF (1979–80), more than 12,500 students and 2,200 faculty members from over 400 schools participated. Their productions across the country drew audiences of more than two million. The festival seeks to encourage new styles of theatrical presentation and methods of staging, innovative approaches to the classics, original plays by young writers, and revivals of significant plays of the past. It emphasizes excellence of total production, including acting, directing, design, and writing.

Nearly eighty productions were presented in twelve regional festivals. Of these, seven were chosen for showcase presentation at the Kennedy Center's new Terrace Theater: *The Servant of Two Masters*, University of South Florida, Tampa; *The Diviners*, Hanover College, Hanover, Indiana; *Personals*, Brandeis University, Waltham, Massachusetts; *Distilling Spirits*, University of Iowa, Iowa City; *Streamers*, State University College, Buffalo, New York; *Philadelphia, Here I Come!*, Wayne State University, Detroit; and



*The Night of the Tribades*, Arizona State University, Tempe. In addition ACTF XII marked the first year that an outstanding educational institution has been invited to present a show at the national festival—*Ladybug, Ladybug, Fly Away Home*, was presented by Trinity University in conjunction with the Dallas Theater Center.

The American College Theatre Festival, supported by the Amoco companies and the Kennedy Center Corporate Fund, is produced by the University and College Theatre Association for the American Theatre Association.

#### ARTS COALITION NORTHWEST

Arts Coalition Northwest is a cooperative arts-in-education pilot project of the Kennedy Center and Seattle Center, serving the states of Washington, Oregon, Idaho, and Alaska. Arts Coalition Northwest promotes the sharing of information, strategies, programs, and resources among school districts, arts funding agencies, the Kennedy Center, and regional cultural centers. It represents the beginning of a federal, state, and local partnership for arts education while linking the programs of a national cultural center with the community and school efforts of a regional arts center. During its first year of operation, Arts Coalition Northwest provided financial support and technical assistance for program planning, training, and curriculum development in arts education.

Arts Coalition Northwest is the first of what is expected to be a network of regional cultural center education programs that will further enable the Kennedy Center to extend its national outreach to strengthen and support the performing arts around the country.

#### MINORITY AFFAIRS PROGRAMMING

A National Commission to Expand the Scope and Constituency of Black Participation in the Performing Arts was formally convened in March 1977 and submitted a final report and recommendations to the Kennedy Center Board of Trustees in March 1979. The commission's mandate was to explore ways in which the center could expand its long-standing commitment to minority participation by artists and audiences in all aspects of the performing arts. During its two-year tenure, the commission pursued its analytical task while it sponsored more than a score of demonstration projects designed to encourage cultural diversity and involvement

of minorities in the performing arts and to identify and assist talented minority artists. Nearly \$600,000 in support was allocated by the center through its Corporate Fund to sustain these efforts.

The commission's final report—*Cultural Diversity and Quality in the Performing Arts*—included in its recommendations to the center the establishment of a standing advisory committee to the chairman on minority affairs. Dr. Archie L. Buffkins, who had served as president of the commission, continued as consultant on minority affairs while the operation of such a committee was formulated.

In June 1980, Roger L. Stevens, chairman of the Kennedy Center Board of Trustees, named the members of the center's present National Committee on Cultural Diversity in the Performing Arts: composer, Roque Cordero; dancer and choreographer, Chuck Davis; singer, Ella Fitzgerald; actress, Cicely Tyson; pianist, André Watts; and playwright, Richard Wesley. Also appointed to the committee were Kennedy Center trustees Marjorie M. Lawson and Henry Strong.

#### FRIENDS OF THE KENNEDY CENTER

The Friends of the Kennedy Center was established by the Kennedy Center Board of Trustees in 1966 as a national self-supporting auxiliary of volunteers. The organization is intended to help provide public service activities and programs on behalf of the center and to assist the center in its efforts to fulfill its role as the national cultural center. Income derived from Friends' membership and its gift and souvenir sales has enabled the Friends of the Kennedy Center to sponsor public service activities and to contribute substantial support—more than \$220,000 in fiscal year 1980—to major Kennedy Center projects such as the American College Theatre Festival and the completion of the Terrace Theater.

Friends national membership numbers nearly 9,000, including Friends of the Kennedy Center chairmen in 39 states and 300 active volunteers in the Washington area who contributed more than 65,000 hours of staff assistance during the past year. The Friends of the Kennedy Center Volunteer Office provides information and assistance for visitors and audiences at the Kennedy Center 365 days a year, from 9:00 A.M. to 9:00 P.M. The Friends volunteers

also provide special visitor assistance to the handicapped and administer the Specially Priced Ticket Program. Friends tour guides offer free tours of the Kennedy Center every day of the year to the more than 6,000 people who visit the center on an average day.

The Friends of the Kennedy Center provided substantial support for a series of free theater and music events at the center during the past year. The Friends supported the "Meet the Composers" series of symposia and recitals as part of the National Black Music Colloquium and Competition. The Friends also sponsored free play readings of new works in the center's Theatre Lab.

Mrs. Polk Guest, who has served as chairman of the Friends since 1966, continued to oversee the organization's activities in Washington and around the country.

#### *SPECIALLY PRICED TICKET PROGRAM*

The Specially Priced Ticket Program has been an integral part of the Kennedy Center's public service efforts since the opening of the center in 1971. As simply one factor in its commitment to broad participation in the performing arts, the center maintains the most extensive reduced-price ticket program in the country, offering 15 percent of available tickets at half-price admission for students, the handicapped, citizens over the age of 65 or of limited income, and military personnel in grades E-1 through E-4.

The cost of the Specially Priced Ticket Program, represented by the potential additional gross income lost to the center, is borne by the center. During the twelve-month period ending September 30, 1980, 91,484 tickets for attractions produced or presented by the center were sold through the Specially Priced Ticket Program. The sale of these tickets at full price would have resulted in an additional gross income to the center of \$413,889.

The center also requires all presenters and independent producers to participate in the Specially Priced Ticket Program by offering a percentage of their tickets for sale at half-price. During the twelve-month period ending September 30, 1980, combined half-price ticket sales for center-produced or presented attractions and those of other presenters totalled 109,800. The sale of these tickets at full price would have resulted in additional gross income of \$794,867 to the center, its associated organizations, and independent producers.





First Lady Rosalynn Carter and Mrs. Joan Mondale, wife of the Vice-President, greeted the 1979 Kennedy Center Honors recipients at the White House. Recipients were (left to right) Henry Fonda, Martha Graham, Tennessee Williams, Ella Fitzgerald, and Aaron Copland. (Photo by Jack Buxbaum.)

#### KENNEDY CENTER HONORS

The Board of Trustees of the Kennedy Center instituted the Kennedy Center Honors Program in 1978 in order to provide national recognition for those outstanding individuals who have enriched American life and culture through their work in the performing arts. The Honors Program was conceived not only to recognize the life achievements of individual artists but also to engender greater interest in the arts throughout the country.

Honors recipients for 1978 were Marian Anderson, Fred Astaire, George Balanchine, Richard Rodgers, and Arthur Rubinstein; for 1979, Aaron Copland, Ella Fitzgerald, Henry Fonda, Martha Graham, and Tennessee Williams. The Board of Trustees of the National Cultural Center selected the following as 1980 recipients of the Kennedy Center Honors: Leonard Bernstein, James Cagney, Agnes de Mille, Lynn Fontanne, and Leontyne Price. All embody the highest accomplishments of their disciplines in the performing arts. The Honors Gala at the Kennedy Center was televised nationwide on December 27, 1980.

### PERFORMING ARTS LIBRARY

The Performing Arts Library, completed in 1979 as part of the Terrace Theater complex, is a joint project of the Kennedy Center and the Library of Congress. The Performing Arts Library operates both as an information and reference facility within the Kennedy Center for artists, visitors, audience members, and staff and as a national clearinghouse for research and information sources on all aspects of the performing arts. Last year more than 16,000 visitors and users came to the library, used its book, periodical, audio-visual, and computer search services, and enjoyed the changing exhibitions on the performing arts.

### FOREIGN GIFTS

The government of Greece presented the Kennedy Center with a cast bronze replica of an antique statue of the god Poseidon. The Honorable John E. Tzounis, the Ambassador of Greece to the United States, made the presentation of the sculpture, an exact copy of one of the most important surviving Greek works of art dating from 460–450 B.C. and thought to be the work of the Boetian sculptor Kalamis. The sculpture is on view to the public on the Box Tier of the Opera House.

### *Funding*

The Kennedy Center was authorized by an act of Congress in 1958 as the national cultural center. In 1964 a unanimous vote of Congress supported the dedication of the center as a living memorial to the late President John F. Kennedy and authorized federal matching funds for the building's construction. The Kennedy Center Board of Trustees raised more than \$34 million, exceeding the matching requirement, and have continued to raise substantial private funding each year to support the wide range of programming mandated by Congress for the national cultural center.

The Kennedy Center continues to fulfill its obligations as a performing arts center and sustains year-round public service and educational programming with virtually no direct federal, state, or municipal funding. Last year more than \$3 million in private, cor-



porate, and foundation contributions enabled the center to extend its educational programming and expertise to cities around the country, to present artists and companies from across America, to increase the participation of minority artists and audiences in all its arts programming, and to develop young talent and sponsor new works.

The United States Department of Education and the Kennedy Center jointly sponsor the Alliance for Arts Education. Contractual funding provided by the Department of Education partially supports other elements of the center's extensive education program—the American College Theatre Festival, the Programs for Children and Youth, and Arts Coalition Northwest. The center reimburses the National Park Service a prorata share of certain annual maintenance, utility, and housekeeping costs on the basis of a formula devised to apportion costs of the building's upkeep as a presidential memorial and its operation as a performing arts center. The Kennedy Center, in turn, bears 100 percent of the costs of maintaining its theaters and extensive backstage facilities in addition to reimbursing the National Park Service nearly \$800,000 in fiscal year 1980 for its apportioned maintenance, utility, and housekeeping costs. During 1980 repair, renovation, and reconstruction of the center's terraces, East Plaza Drive, and roof to correct water leaks were completed through a special appropriation of \$4.5 million to the National Park Service which was authorized in 1977.

The Kennedy Center's operating budget from its theater operations, concession income, and private contributions exceeded \$20 million last year. Financial support from private sources of more than \$3.5 million for fiscal year 1980 was essential to the center for carrying out the broad mandate of performing arts, public service, and educational programming set forth in its authorizing legislation, but not supported by federal appropriations. Since 1971, the center's first year of operation, foundations, corporations, and individuals have contributed more than \$15 million to enable the center to carry out its mandated responsibilities as the national cultural center. A major portion of this sustained private support has been provided since 1977 by the Corporate Fund for the Performing Arts, organized by major American corporations to support the Kennedy Center, with particular emphasis on assisting its educational and public service programs. Contributed funds



enable the center to broaden its national outreach, to offer certain performing arts presentations free or at reduced prices, and to increase access to the center by young companies and artists from around the country. Participation in the Corporate Fund is open to any corporation that contributes to the center. James L. Ferguson, chairman of General Foods Corporation, served as chairman of the 1980 Corporate Fund. Fund contributions received during the past year are named in Appendix 8.

### *Board of Trustees*

The Kennedy Center is independently administered by a presidentially appointed, forty-five-member Board of Trustees as a bureau of the Smithsonian Institution. Thirty citizen members are appointed by the president of the United States to ten-year terms; six board members are thus appointed every two years. Remaining members are legislatively designated *ex officio* representatives of legislative and executive branches. Members of the Kennedy Center Board of Trustees are listed in Appendix 1.

#### *PRESIDENT'S ADVISORY COMMITTEE ON THE ARTS*

New appointments to the President's Advisory Committee on the Arts for the Kennedy Center were announced in March 1979. The committee, whose members are involved with the arts in every section of the country, met at the Kennedy Center in October 1979 under the cochairmanship of Elizabeth Petrie and Robert Millonzi. The Advisory Committee on the Arts was established to assist the center's Board of Trustees on private fund-raising and national outreach programs. Names of the members of this committee are listed in Appendix 1.

WOODROW WILSON  
INTERNATIONAL CENTER  
FOR SCHOLARS

JAMES H. BILLINGTON, DIRECTOR

THE WILSON CENTER—with the Kennedy Center for the Performing Arts and the National Gallery of Art—is one of three institutions with mixed trust / public funding created by the Congress within the Smithsonian Institution in Washington, D.C., fulfilling a national mission under a board appointed by the president of the United States. The Wilson Center is an active workshop and switchboard for scholarship at the highest levels. Since its opening ten years ago this fall, it has gained widespread recognition for the work of its fellows in mining the scholarly riches of Washington, for its many meetings that bring together the world of affairs and the world of ideas, and for its democratic openness to all comers through its annual fellowship competition.

Each year, some forty-five fellows are brought in through open international competition involving ever-increasing numbers of applicants from a wide range of backgrounds, disciplines, cultures, and nations. A broad spectrum of ideas is, in turn, shared with a nonspecialized national audience through *The Wilson Quarterly*, which already has more subscribers than any other scholarly quarterly journal in the English-speaking world.

The Wilson Center seeks to render a service to the world and to the Washington, D.C., community by throwing open its core fellowship program to all interested individuals, both American and foreign. In effect, the center conducts an annual inventory of creative scholarship throughout the world. Fellows are selected for the promise, importance, and appropriateness of their projects on the recommendation of broadly based academic panels outside the

center. The Wilson Center has special areas of emphasis that provide focus without the rigidity of university departments and tenured faculties. Fellows come for limited periods, not only in the broadly inclusive general division of history, culture, and society studies, but also in special programs in Russian and Soviet studies (the Kennan Institute), Latin American studies, international security studies, East Asia studies, and a program in American society and politics. Each program is directed by a scholar on the staff.

Following its mandate to symbolize and strengthen the fruitful relation between the worlds of learning and of public affairs, the center sponsors conferences and seminars on topics of special current interest to both worlds. In 1980, for example, representative meetings brought scholars, businessmen, foreign visitors, and United States policymakers together to discuss a wide variety of topics. American scholars discussed the future of Sino-Soviet relations with leading diplomats from both the Soviet Union and the People's Republic of China. Two leading Latin American novelists who have been fellows at the Wilson Center—Carlos Fuentes from Mexico and Mario Vargas Llosa from Peru—with Zbigniew Brzezinski, assistant to the president for national security affairs, and center fellow Laura Nader, discussed the role of ideas in Latin America. In many cases, the meetings produced papers and/or books that have been widely circulated to interested persons.

As usual, the center's fellows have come from many corners of the globe and from all sections of the United States. Among its 1980 fellows and guest scholars have been Karl Dietrich Bracher, professor of political science and contemporary history, University of Bonn; John Futrell, professor of law, University of Georgia and former president of the Sierra Club; Emmanuel Obeichina, chairman, department of English, University of Nigeria; Lt. General (Ret.) Edward Rowny, United States Army, chief of United States military negotiations for SALT; Neil Sheehan, journalist and author; and Yao Wei, chief of the press division, Ministry of Foreign Affairs, People's Republic of China. The result of this broad mixing of scholarly interest and life experience is greater than the sum of its parts: the collegial atmosphere provides an opportunity for communication and learning that crosses cultural, national, and disciplinary boundaries for the enrichment of all.



## READING IS FUNDAMENTAL, INC.

MRS. ROBERT S. MC NAMARA, CHAIRMAN

RUTH GRAVES, PRESIDENT

IN 1980, READING IS FUNDAMENTAL, INC. (RIF) marked another successful year in its efforts to promote reading and literacy in America. As RIF approaches its fifteenth anniversary in 1981, it is appropriate that the past year also signaled a major transition for the organization.

RIF is based on a simple idea: that if children are allowed to choose and keep books, they will read more. And so, through community projects across the country, RIF distributes books to millions of children each year. RIF enjoys tremendous popularity for this direct approach, and is now widely recognized as a leader among literacy programs.

RIF's first years were devoted to building a network of projects; from 1966 to 1976, 400 programs were established in forty-three states. In 1976 Congress passed legislation creating the Inexpensive Book Distribution Program, which provides federal matching funds to these projects to buy books. Since then, RIF has grown enormously. In 1980, 4,000 RIF projects distributed 11 million books to more than three million youngsters. With these projects firmly established, RIF shifted its focus this year from growth to improved services, to both existing projects and the general public.

The drive to improve services has taken several forms. In a continuing commitment to disadvantaged youngsters, RIF funded 65 projects serving 80,000 children of migrant and seasonal farm workers. And in RIF's fifth contract with the Department of Education to operate the Inexpensive Book Distribution Program, increased emphasis has been placed on "technical assistance." To meet this goal, RIF has tapped the experience of longtime volun-

teers by training some as local community consultants. These consultants will hold meetings, each in his or her own region, offering advice on subjects such as reading motivation, volunteer recruitment, and parental involvement in the RIF program. As part of the increased emphasis on services, moreover, RIF has developed an information booth for conventions and conferences where attending project leaders can receive individual guidance on their programs.

RIF's public service television announcements reflect a trend toward increasing community involvement. Since 1971, RIF's public service advertising campaign has been approved by The Advertising Council and generously supported by the media. Previous television spots encouraged viewers to start RIF projects in their communities. In RIF's newest announcements, however, actor Ed Asner urges viewers to support existing projects. In the first six months of 1980, the CBS television network alone gave \$2 million in free broadcast time to the Asner ad; ABC gave \$1 million. Figures for NBC are not yet available.

RIF's new magazine advertisements have reinforced RIF's traditional commitment to parental involvement in reading. Under the headline "Bring Back the Bedtime Story," one of these advertisements reads ". . . we must inspire the next generation to *want* to read—first by reading to our children, and later by putting books into their own hands . . . . So, if you have youngsters, put the RIF philosophy to work in your home. Bring back the bedtime story tonight." From the beginning, RIF has sought to involve parents, and today about 40 percent of RIF volunteers are parents. RIF recognizes their critical importance to reading motivation, and hopes to fund major projects for parents in the coming years.

While moving in these new directions, RIF continued to provide its traditional services in 1980. Through meetings held across the country, RIF helped 1,030 volunteers with technical problems and suggested creative approaches to reading motivation. RIF continued to distribute its publications, including *The Bulletin*, which appeared in a new design format and continued to offer practical ideas for local volunteers. Among this year's special features in *The Bulletin* were articles on involving parents in reading motivation and on using the public library. RIF also continued to negotiate substantial discounts for its projects with nearly three hundred

book publishers and distributors. These discounts average 30 percent per book.

Over the past year RIF enjoyed the continued support of the educational community, including the American Library Association, the National Association of Elementary School Principals, the National Education Association, and the International Reading Association. In 1980, RIF had the generous financial support of over fifty of America's major foundations and corporations, as well as many service organizations, labor groups, and private citizens.

Studies continue to confirm RIF's effectiveness at reading motivation. For example, a 1980 study of children grades one through six in a California school concluded: "The results verified that generally, all children became more positive toward reading after RIF." Boys and the older children made special gains, as the writers noted: ". . . even in a school where the worth and value of reading is already important to students, RIF can make a positive impact. It made its greatest impact on those hard to motivate boys and intermediate children." Results of the California study support earlier research, including statewide surveys in Texas and Pennsylvania, that show RIF significantly increases a child's desire to read and often results in higher reading scores.

Reading Is Fundamental's success in 1980 again demonstrated the durability of this remarkable public/private partnership. As an article in the *New York Times* put it this year: "Some ideas die because they are simply too good to be true. But RIF seems to be one of those rare examples of how the government has joined with the 'grass roots' community and virtually everyone has wound up applauding."



SMITHSONIAN SCIENCE  
INFORMATION EXCHANGE, INC.

DAVID F. HERSEY, PRESIDENT

IN LAST YEAR'S REPORT it was indicated that the full transfer of the Smithsonian Science Information Exchange (SSIE) from the Smithsonian Institution to the Department of Commerce was expected to take place October 1, 1980. However, in considering the Department of Commerce budget request for fiscal year 1981, which included funds for the integration of SSIE into the Department of Commerce, the House Appropriations Committee denied the funds requested to cover integration costs—in order to give time to appropriate legislative committees of the House and Senate to review the loss of substantial employment rights of SSIE employees if they are converted to Civil Service status under existing laws. Funds to continue the support by contract (with SSIE) for another year were approved pending resolution of these matters. In summary, this action would tend to indicate that the merger will be delayed to afford time during which the Exchange would continue its cooperative status with the Smithsonian Institution.

*IMPROVING THE DATA BASE OF ONGOING  
RESEARCH INFORMATION*

Previous interactions by SSIE with the Ad Hoc Committee on Scientific and Technological Information of the Federal Coordinating Council for Science, Engineering, and Technology, along with increased liaison by the Exchange with federal agencies, are believed to have resulted in a somewhat more timely input into the Exchange of federally supported research information. As federal agencies improve their own systems of ongoing research information which they support, information in the SSIE system will be-

come more timely and comprehensive. The Ad Hoc Committee is continuing its work and expects to develop a series of recommendations for improving the transfer of scientific and technical information by the end of 1980. A number of the recommendations to be developed are expected to deal with input to and use of the Exchange with further positive benefits.

Registration of ongoing research projects initiated in fiscal year 1979 is expected to reach 120,000, a figure comparable to that of the previous fiscal year, with projects initiated in fiscal year 1980 being higher than at the same time in the previous year. Unfortunately, because of limited funding, the number of non-federally-supported research projects is somewhat less than has been registered in previous fiscal years. The Exchange believes such research is of major importance to its users and will seek funding to continue registration of research since inclusion contributes to the uniqueness of the Exchange's system.

It is clear from SSIE's participation in the recent meeting of world experts in ongoing research information, convened by UNESCO early in September 1980, that such information continues to be of interest worldwide and that in the near future United States scientists and research managers may have greater access to such information from overseas sources than has been the case in the past. It is clear that the United States has been providing far more information on such research to other countries in comparison to what it has been able to get back, even when such information is known to exist. As noted in earlier reports, the Exchange has pioneered in numerous projects relating to the collection and dissemination of foreign research to United States scientists in selected subject categories throughout the past ten years; several recent examples are discussed below.

#### *INCREASING AWARENESS AND USE OF THE EXCHANGE*

In a continuing effort to provide faster and better services to its users, the Exchange replaced its previous computer processing unit, an IBM 370/138 with the newer IBM Central Processing Unit 4341. The new unit, which is now in operation, has over three times the processing speed of its predecessor. This will allow for more rapid delivery of output as well as improved speed of input and thus availability of information for retrieval. In addition, it

has four times the memory storage of the old unit, allowing for additional terminals to input and access the system as well as provide for growth and development of new output services—including computer-to-computer communication. The Exchange anticipates that with the forthcoming merger of SSIE with the National Technical Information Service (NTIS), such additional capability will become extremely useful.

In anticipation of the forthcoming transfer, the Exchange began in the current year to negotiate with NTIS to improve access to SSIE's data file through the assistance of the Department of Commerce. Among those activities considered have been the utilization of NTIS as lessor of the Exchange's data base. Many organizations both in the United States and overseas have expressed their desire over the past several years to lease such information. Inasmuch as NTIS already has similar tape files from federal and nonfederal organizations which it purveys, such an arrangement could stimulate dissemination far beyond those agreements SSIE has developed in the past. Use of other NTIS marketing capabilities for the dissemination of ongoing research information has been discussed and will, it is hoped, be implemented in the coming year.

While use of on-line searching has become a major approach for the utilization of ongoing research information, the Exchange has continued to provide many other services to its users concerned with research and development management. Among the many new directories of ongoing research information in selected subject areas prepared by the Exchange during the past year were publications on epidemiological research, solar energy and nonfossil fuel research, synthetic fuels and biosaline research, the latter including research performed on an international level as well as in the United States.

Consultant services in the use of microcomputers for data base searching and retrieval were provided to the Department of the Navy at its request. The Exchange has also continued its participation in both federal and nonfederal groups dealing with problems associated with the collection and dissemination of scientific and technical information. Such participation included representation on the United States Commission of the International Congress of Scientific Unions Abstracting Board (ICSU/AB) and the Committee of World Experts of Information on Research in Prog-



ress, convened by the Secretary General of UNESCO early in September to advise him on a continuing program in this area as a part of that organization's General Information Program.

In summary, the Exchange has continued to work towards the promotion and expansion of ongoing research information as an integral part of the research process in all areas of science and technology, not only nationally but internationally as well.



Major paintings acquired during the year by the National Gallery of Art included the first work by Fitz Hugh Lane to enter the collection, *Lumber Schooners at Evening on Penobscot Bay*, an oil on canvas dated 1860.

## NATIONAL GALLERY OF ART

J. CARTER BROWN, DIRECTOR

THE NATIONAL GALLERY OF ART, although formally established as a bureau of the Smithsonian Institution, is an autonomous and separately administered organization. It is governed by its own board of trustees, the ex officio members being the Chief Justice of the United States, the Secretary of State, the Secretary of the Treasury, and the Secretary of the Smithsonian Institution. Of the five general trustees, Paul Mellon continued to serve as chairman of the board, with John R. Stevenson and Carlisle H. Humelsine as president and vice-president, respectively. Also continuing on the board were Dr. Franklin D. Murphy and Ruth Carter Johnson.

During fiscal year 1980, a record total of 5,997,210 visitors were counted entering both of the gallery buildings, an increase over the previous year's record attendance figure of 5,529,802.

The year was distinguished by the opening of the Center for Advanced Study in the Visual Arts, culminating thirteen years of planning and preparation. An advisory board was appointed and met twice, in the fall and the spring. A Selection Committee met in January and announced the names of the first group of scholars for the academic year 1980–81. Office spaces for the center were finished and occupied by the middle of August and an open house was held for the gallery staff in September.

The gallery staff was saddened by the deaths of three very generous benefactors. Edgar William and Bernice Chrysler Garbisch had donated over the years more than 250 American naive paintings. Their final bequest of 65 paintings and 18 graphics included outstanding works by Thomas Chambers, John Durand, Erastus Salisbury Field, and Joshua Johnston, a *Peaceable Kingdom* by Edward Hicks, and several anonymous American masterpieces.



The death last year of Lessing J. Rosenwald, one of the gallery's Founding Benefactors and for many years a general trustee, meant the loss not only of the generous donor of the greatest collection of prints and drawings ever assembled by an American, but of a wise and attentive friend of the gallery. The transfer of some 20,000 works of art, which had been on view at Mr. Rosenwald's gallery at Jenkintown, Pennsylvania, came three weeks after the Graphic Arts Department had completed the mammoth job of moving the entire collection of 50,000 prints and drawings from the West Building to its spacious new facility in the East Building.

Among the outstanding graphics acquired by gift during the year were two rare and very fine landscape drawings by Jacob de Gheyn and William Buytewech, two of Domenico Tiepolo's series of large *Punchinello* drawings, a beautiful Andrew Wyeth watercolor entitled *Hawk Mountain*, a large color lithograph of *Bathers* by Cézanne, and a complete set of Giovanni Battista Piranesi's *Antichita Romane*.

Purchases of drawings were highlighted by the *Head of Saint John the Baptist* by Hans Baldung Grien and the finest surviving drawing by Jacopo Bassano, the *Mocking of Christ*.

Two major sculpture acquisitions were donated by the gallery's Collectors Committee: Max Ernst's surrealist composition entitled *Capricorn*, and a David Smith entitled *Sentinel I*.

Major paintings acquired during the year included the first Fitz Hugh Lane to enter the collection, *Lumber Schooners at Evening on Penobscot Bay*, a rare and lyrical twilight scene. Two fine American portraits, *Samuel Alleyne Otis* by Gilbert Stuart and *Mrs. Samuel Alleyne Otis (Elizabeth Gray)* by John Singleton Copley, were donated by a descendant of the sitters.

Twelve exhibitions offered during the year drew from the arts of six centuries, from thirteenth-century Duccio in the selection of masterpieces from the collection of Baron Thyssen-Bornemisza and exquisite Persian miniatures of the sixteenth century, to the wall-size paintings of the present day in the Morton G. Neumann Family Collection. American painting and decorative arts were well represented throughout the year. Three such exhibitions ran concurrently. The revelatory *American Light: The Luminist Movement, 1850–1875* examined for the first time the full artistic and philosophic range of the landscape artists of this period, from their

predecessors of the Hudson River school to their influence on artists who followed. At the same time, the visitor could see *In Praise of America: Masterworks of American Decorative Arts, 1650–1830*, a selection of furniture, glass, and silver masterpieces created by craftsmen in this country's first two hundred years, and a complementary display of watercolor renderings of similar objects from the Index of American Design. In May, the gallery opened a comprehensive survey of *Post-Impressionism: Cross-Currents in European and American Painting, 1880–1906*, an exhibition of approximately three hundred paintings illustrating the response of artists in Europe, Great Britain, Scandinavia, and America to impressionism.

The gallery made loans to thirty-three exhibitions at 36 American institutions and to sixteen exhibitions at 19 museums in Europe and Asia. Included were a total of 64 paintings, 28 sculptures, and 46 works of graphic art.

The Education Department prepared brochures, electronic tours, wall texts and object labels, special tours, and film programs designed to add to the visitor's appreciation of the special exhibitions. Attendance at these events and the regularly scheduled tours and talks relating to the gallery's collections which are given by Education Department staff docents, as well as tours conducted by volunteer docents for area school children and foreign visitors, and the auditorium lectures delivered by invited scholars, totaled 171,581. From January to May, students from Gallaudet College's Interpreter Training Program accompanied staff lecturers, interpreting the talks to hearing-impaired visitors.

Among the thirty-seven guest speakers during the year were Peter Kidson, noted British architectural historian, who delivered the 1980 A. W. Mellon Lectures in the Fine Arts on "Principles of Design in Ancient and Medieval Architecture." Other distinguished speakers included William Heckscher, formerly of Duke University, and Otto von Simson, of the Berlin Free University, who shared the 1979–80 National Gallery of Art Kress Professorship; Alan Bowness, director of the Tate Gallery, London; Allen Rosenbaum, acting director of the Art Museum, Princeton University; and Stuart Cary Welch, curator of Muslim and Hindu painting at the Fogg Museum at Harvard.

Two programs developed and produced by the Department of

Extension Programs during the year won 1980 CINE Golden Eagle Awards. The films were concerned with two of the works of art which were commissioned for the East Building, the *Mobile* by Alexander Calder and *Femme/Woman: A Tapestry* by Joan Miró. A third film which won a CINE Golden Eagle, *Adventures in Art*, was produced by Station WETA-TV with the assistance of the department and provided a half-hour introductory tour of the gallery's collections with actress Julie Harris. Over the year, the programs developed and distributed by the department served an audience estimated at 7,991,771 persons throughout the United States, in nine foreign countries, three territories, and twenty-eight military installations abroad, through individual bookings of program material and through public and education television broadcasts.

Thirty-nine Sunday evening concerts were given in the East Garden Court of the West Building. Attendance at these concerts remained high, exceeding capacity at the eleven concerts given by the National Gallery of Art Orchestra conducted by Richard Bales, who celebrated his thirty-seventh season at the gallery.



## CHRONOLOGY

The following is a representative selection of Smithsonian events during the fiscal year. No attempt has been made to make this a complete compilation of Smithsonian activities.

### October

**Collections Inventory:** Inventory of the national collections, an accelerated program, was undertaken by collections management and is designed to provide a comprehensive registry of all Smithsonian holdings.

**New Program:** The Office of Public Affairs began the Smithsonian News Service, a nationwide, feature-story service for daily and weekly newspapers, aimed at promoting awareness of the Institution's activities in science, art, technology, and history.

**Seminars:** Fifty midday seminars led by visiting and Smithsonian experts were sponsored throughout the year, from October 5, 1979, through September 23, 1980, by the Department of Zoological Research. Subjects ranged from *Digestive Physiology of the Hindgut in Mammals* to *Deferred Reproduction in Wolves*.

**Training Sessions:** Administrative and management training sessions were initiated for Smithsonian staff; the series included personnel policies, supervision, performance appraisal, and equal opportunity.

**Seminar:** *The Quest for Beauty*, second seminar in the series *North Carolina Scholars at the Smithsonian*, bringing special emphasis to art and its relationship to science, was sponsored by the Office of Smithsonian Symposia and Seminars.

**Special Series:** Smithsonian Astrophysical Observatory inaugurated monthly "Open Nights" for the public, featuring a film, lecture, and telescopic observing.

**Award:** Smithsonian Astrophysical Observatory's Steven Weinberg—also a Professor of Physics at Harvard—was awarded the 1979 Nobel Prize in Physics for his contributions to the elucidation of a "Unified Theory of Weak and Electromagnetic Interactions."

**Award:** National Museum of Natural History botanist F. Raymond Fosberg received the 1979 Edward W. Browning Award in recognition of his accomplishments in the understanding and conservation of our natural environment.

**Special Study:** First cruise of the research vessel took place on the Rhode River to test "Solar Radiation in an Estuary," a collaborative effort of the Chesapeake Bay Center for Environmental Studies, Radiation Biology Laboratory, and Museum of Natural History, with funding by a Smithsonian Scholarly Studies grant.

**Performance Series:** The Dick Myers Puppet Theater opened the Division of Performing Arts *Discover Performing!* series of programs for children.

**Seminars:** Fourteen Selected Studies seminars were sponsored throughout the year by the National Associate Program. Subjects ranged from *Genealogical Research* to *Astronomy of the Ancients*.

**Lecture Series:** "Sun: Star of Life," a four-part lecture series, began at the National Air and Space Museum. Lectures dealt with our sun and the most recent attempts to make solar energy more useful in our everyday lives.

**Research:** The Office of Biological Conservation and the Threatened Plants Committee began a joint study to identify endangered, vulnerable, and rare plant species in Mexico and Central and South America in order to determine the true status of these species and the threats to their habitats.

**Outreach:** The Education Department of the National Museum of History and Technology began the Senior Series, a thematic outreach program developed for senior citizens.

#### October 1

**Appointment:** Roger G. Kennedy became director of the National Museum of History and Technology.

**Videotape Release:** The Office of Telecommunications released its new videotaped program, jointly produced with the Office of Elementary and Secondary Education, for the training of guards to assist hearing-impaired visitors to the museums.

#### October 2

**Lecture Series:** Keynote address by energy expert Daniel Yergin opened the seven-week series of free public lectures on energy alternatives, *Future Power: Realities and Myths of the Energy Crisis*, made possible by a grant from the National Science Foundation and presented by the Resident Associate Program.

#### October 3-8

**Folklife Festival:** The thirteenth annual Festival of American Folklife featured participants from across the nation, including Caribbean Americans, Finnish Americans, and newly arrived Americans from Southeast Asia. A traditional energy-efficient house type, called the *Dog Trot House*, was constructed on the National Mall.

#### October 4

**Awards:** The National Zoo received five awards for graphic design from the American Association of Zoological Parks and Aquariums. Awards were for exhibits, traffic signs, publications, and souvenir design.

**Milestone:** Fifth anniversary was marked at the Hirshhorn Museum and Sculpture Garden, now the best attended contemporary art museum in the country.

#### October 5-6

**Lecture:** Outreach program on *Carnival* at Howard University and the Duke Ellington School of the Arts was sponsored by the Center for the Study of Man. Seminar on *Carnival* was part of the Festival of American Folklife on the National Mall.

#### October 5-7

**Concert Series:** The American Musical Theater Series of the Division of Performing Arts opened with an evening of music with Max Morath as host.

#### October 7

**Visit:** Pope John Paul II visited the Smithsonian Institution Castle Building, was greeted by Secretary Ripley and Chief Justice Warren Burger, and was presented with the Smithsonian Medal.

#### October 9

**Exhibition:** *Edison: Lighting a Revolution* opened at the National Museum of History and Technology, celebrating the 100th anniversary of the light bulb.

#### October 12

**Awards:** *Reunions: Memories of an American Experience*, produced by the Office of Telecommunications and the Motion Picture Unit of the Office of Exhibits Central, was honored with the Chris Bronze Plaque Award by the Film Council of Greater Columbus, Ohio.

#### October 12–14

**Sampler Weekend:** First of three special weekends for Associates was held with tours and lectures in five museums on the National Mall. This activity was sponsored by Associates Travel, Smithsonian National Associate Program.

#### October 13

**Special Event:** *Tallulah: A Dramatization by Eugenia Rawls* was presented by the National Portrait Gallery, the first in a series of "Portraits in Motion."

#### October 14

**Concert Series:** The Dixie Hummingbirds, with a fifty-year tradition of gospel quartet music, launched the new series of Black Gospel Music presented by the Division of Performing Arts.

**Exhibition:** *Mies van der Rohe: The Barcelona Pavilion* opened at the National Gallery of Art.

#### October 15

**Special Event:** Isaac Bashevis Singer, Nobel Prize-winning novelist, gave a talk on *My Life as a Jewish Writer*, as part of the National Portrait Gallery "Living Self-Portrait" series.

**Exhibition:** *Afro-American Tradition in the Decorative Arts* opened at the National Museum of History and Technology, with craft demonstrations by the Office of Folklife Programs.

#### October 16

**Exhibition:** *Smithsonian*, comprising hundreds of objects borrowed from all branches of the Institution, opened at the Cooper-Hewitt Museum in New York.

#### October 21

**Concert Series:** The 20th Century Consort began its residence at the Hirshhorn Museum and Sculpture Garden, including a world premiere of a work by William Penn and other works of modern chamber music, in a series presented by the Division of Performing Arts in conjunction with the Hirshhorn.

#### October 22–24

**Workshop:** The Native American Museum Training Program conducted the Arctic Regional Workshop in Anchorage, Alaska. This workshop was sponsored by the Office of Museum Programs.



### October 23

**Publication:** *The National Air and Space Museum*, a lavishly illustrated book by award-winning journalist C. D. B. Bryan, was published.

### October 24

**Exhibitions:** *The Great Crash* opened at the National Portrait Gallery, and *After the Crash* opened at the National Collection of Fine Arts, both commemorating the fiftieth anniversary of the stock market collapse and the onset of the Great Depression.

**Audiovisual Release:** "Demonstration of a technique for glueing a thin warped wood panel," a videotape for conservators and museum personnel, was produced by Conservation Information Programs of the Conservation Analytical Laboratory.

### October 26

**Symposium:** Five pioneers of jet aviation participated in an all-day symposium at the National Air and Space Museum to mark the fortieth anniversary of the jet age. All illustrated book containing the lectures plus five additional articles was published.

### October 27–28

**Concert Series:** Mel Lewis and the Jazz Orchestra played a concert of big band music in the first performance of the American Jazz Heritage Series offered by the Division of Performing Arts.

### October 28–31

**Symposium:** The Office of Museum Programs sponsored an international symposium on *Children in Museums*.

### October 29

**Concert Series:** Guest violinist Jaap Schroder and the Smithsonian Chamber Players opened the Three Centuries of Chamber Music Series presented by the Division of Performing Arts.

### November

**Delegation:** Paul N. Perrot, Assistant Secretary for Museum Programs, led a delegation to China at the invitation of the Scientific and Technical Association of the People's Republic of China to lay the groundwork for scholarly cooperation in biology, archeology, and museum professional exchanges.

**New Program:** The Office of Biological Conservation assumed responsibility for administration of the Seychelles Island Foundation.

**Parking:** Paid parking for staff and others using Smithsonian facilities was inaugurated.

**Education:** Special Education Teachers' Day was held at the Office of Elementary and Secondary Education.

**Discovery:** National Museum of Natural History paleobiologist Dr. Storrs Olson and colleague reported—in *Science* magazine—discovery of a previously unknown fossil group of giant, flightless penguinlike birds.

**Research:** An interdisciplinary study on "Nutrient Dynamics of the Rhode River" was initiated by Chesapeake Bay Center for Environmental Studies scientists, with funding by the National Science Foundation through the Chesapeake Research Consortium.

**Acquisition:** The Pabst Orchid Collection was donated to the Smithsonian.

## November 2

**Acquisition:** A major collection of Chinese calligraphy was purchased by the Freer Gallery of Art under the recently instituted five-year Regents program for acquisitions of outstanding quality.

**Concert Series:** Traditional solo dances from the Peking Opera were performed by Hu Hung-Yen in the opening performance of the World Explorer Series, sponsored by the Division of Performing Arts.

## November 3

**Traveling Exhibition:** *Jacob Jordaens: Drawings and Prints* began its United States tour at Arapahoe Community College Gallery of Art, Littleton, Colorado.

## November 7

**New Program:** First guided visit to Barney Studio House of the National Collection of Fine Arts took place. Barney House has been renovated to evoke its original mood and intent as a place of artistic enjoyment.

## November 8

**Awards:** Archives of American Art marked its twenty-fifth anniversary. The first Archives Awards were presented to five scholars for their writings, over a fifty-year period, on fine arts, graphic arts, and decorative arts. Honorees received copies of the Archives' four-volume *Arts in America: A Bibliography*, published this year by the Smithsonian Institution Press.

## November 9

**Exhibition:** *A Decade of Discovery: Selected Acquisitions, 1970–1980* opened at the Freer Gallery of Art.

## November 11

**Exhibition:** *Robert Edge Pine: A British Portrait Painter in America, 1784–1788*, featuring 38 portraits by this little-studied artist of the early Federal period, opened at the National Portrait Gallery.

## November 12

**Concert Series:** Martin Pearlman performed a program of French harpsichord music in the opening concert of the Hall of Musical Instruments Series offered by the Division of Performing Arts.

## November 13

**Course:** The first lecture was given of a five-week series, "Beyond Fashion: Costumes for Stage and Life," featuring America's top costume designers. The series was organized by the Resident Associate Program.

## November 14

**Awards:** A total of nine CINE Golden Eagle Certificates were presented at the Council on International Nontheatrical Events ceremonies to the principal production staff of the Office of Telecommunications and the Motion Picture Unit of the Office of Exhibits Central for the films *Mirrors on the Universe: The MMT Story* and *Reunions: Memories of an American Experience*.

## November 17

**Special Event:** A Tri-Museum Experience of African and Afro-American history took place at the Museum of African Art, Anacostia Neighborhood Museum, and National Museum of History and Technology.

### November 18

**Exhibition:** *Old Master Paintings from the Collection of Baron Thyssen-Bornemisza* opened at the National Gallery of Art.

### November 20

**Broadcast:** *Radio Smithsonian*, the Office of Telecommunications' weekly half-hour program increased its audience to include stations in Dallas, Atlanta, San Diego, and Boston.

### November 25

**Expedition:** A two-week Panama Orchid Expedition was undertaken by Smithsonian representatives James R. Buckler, Paul E. Desautels, Jeffrey Ploskonka, and Robert Read.

### November 30

**Exhibition:** The National Collection of Fine Arts marked the opening of the retrospective exhibition *Hugo Robus (1885-1964)*, which included a group of oils never before shown.

### December

**Special Event:** "Hirshhorn Holiday," a family event with skits, music, cartoons, and animated films was celebrated at the Hirshhorn Museum and Sculpture Garden.

**Kwanza:** The seven-day celebration based on African festivals of thanksgiving was celebrated throughout the month at the Anacostia Neighborhood Museum and the Museum of African Art.

**Deaf Awareness Week:** The Office of Elementary and Secondary Education sponsored the Smithsonian / Kendall School program for the Martin Luther King Library.

**New Materials:** *The Rare Book Box*, a slide show, and *The Museum Bracket-maker*, a videotape, were released by the Office of Museum Programs.

### December 5

**Broadcast:** *Smithsonian Galaxy* features, produced by the Office of Telecommunications, increased distribution to 122 radio stations around the country.

### December 6

**Exhibition:** *The Drawings of Morris Louis*, with 57 drawings shown for the first time, opened at the National Collection of Fine Arts.

### December 8

**Latino Day:** A day of educational activities in Spanish for the Hispanic community was sponsored by the National Zoo.

### December 9

**Exhibition:** *Italian Drawings in The Art Institute of Chicago* opened at the National Gallery of Art.

### December 14

**Holiday Exhibition:** The Office of Horticulture produced the *Trees of Christmas* at the National Museum of History and Technology, and provided holiday decorations throughout the Smithsonian museums.



## December 26–31

**Special Event:** A traditional holiday celebration reflecting the customs of Christmas and Hanukkah, cosponsored by the Division of Performing Arts and the National Museum of History and Technology, opened with seasonal music, crafts, performances, and demonstrations.

## December 27

**Concert Series:** The Smithsonian Jazz Repertory Ensemble made its debut at Carnegie Hall in the first performance of the New York Series presented by the Division of Performing Arts.

## January 1980

**Appointment:** Dr. Richard S. Fiske was appointed director of the National Museum of Natural History.

**Exhibition:** The Regional Events Program of the Smithsonian National Associate Program organized *Beyond the Ocean, Beneath a Leaf*, an exhibition of nature photography by Museum of Natural History's Kjell Sandved at the Science Museum and Planetarium of Palm Beach County, in conjunction with a week-long series of lectures for members.

**Program:** The Office of Elementary and Secondary Education sponsored the "Exploring the Smithsonian" program with the District of Columbia public schools.

**Lecture Series:** "Exploring Space with Astronomers," a monthly lecture series, began at the National Air and Space Museum, bringing well-known astronomers into contact with the public under the stars of the museum's planetarium.

**Performances:** "Saturday Live," a series of varied musical programs, began its schedule for Saturday afternoons in the Hall of Musical Instruments at the National Museum of History and Technology.

## January 4

**Exhibition:** *Howard Chandler Christy*, a small collection of works and memorabilia highlighting the career of the creator of the famous "Christy Girl," opened at the National Portrait Gallery.

## January 10

**Seminar:** A seminar on black military pilots held at the National Air and Space Museum brought together some well-known World War II black flyers, including B. O. Davis, the United States Air Force's first black general.

## January 13

**Broadcast:** The Office of Telecommunications' *Radio Smithsonian* celebrated its tenth anniversary on the air with a special program chronicling many of the changes that have taken place at the Institution over the past decade. The program is now broadcast over sixty stations nationwide with a potential listening audience of six million.

## January 14

**Concert Series:** The American Dance Experience Series of the Division of Performing Arts opened with a performance by Melvin Deal and the African Heritage Dancers and Drummers.

## January 18

**Telecast:** The first cable telecast of Smithsonian films, *Celebrating a Century* and *The Smithsonian Institution with S. Dillon Ripley, Secretary*, were aired

through arrangements between the Office of Telecommunications and the Appalachian Community Service Network.

#### January 22

**Exhibition:** *The Oceanliner: Speed, Style, Symbol*, a popular and nostalgic show, opened at the Cooper-Hewitt Museum in New York.

#### January 23

**Lecture:** Edward C. Stone, project scientist of NASA's Voyager program was the National Air and Space Museum's third annual Wernher von Braun lecturer.

#### January 30

**Conference:** Songleaders, ensembles, cultural activists, and documentors of the Civil Rights movement gathered for the first major review of the cultural data generated by the movement. A photography exhibition highlighted the five-day conference, sponsored by the Division of Performing Arts.

#### February

**Appointment:** Phillip S. Hughes assumed the position of Under Secretary of the Institution.

**Quadrangle Development:** The Boston firm of Shepley Bulfinch Richardson and Abbot was selected to complete the design concept for the project prepared by Junzo Yoshimura. The design received general approval from the Commission of Fine Arts on April 8, 1980.

**Colloquium:** *The Muses Flee Hitler*, a colloquium in honor of Albert Einstein during the centennial of his birth, was jointly sponsored by the Office of Smithsonian Symposia and Seminars and the Joseph Henry Papers.

**Workshops:** Five three-day cooperative workshops sponsored by the Office of Museum Programs and the Southern Arts Federation were held from February to April. Subjects ranged from *Fundamentals of Museum Management* to *Soliciting and Administering Grants*.

**Exhibition:** *Out of Africa: From West African Kingdoms to Colonization* opened at the Anacostia Neighborhood Museum. Dr. Chancellor Williams, eminent historian, educator, and author lectured on ancient West African Kingdoms.

**Publications:** Mary Cassatt: *A Catalogue Raisonné of the Graphic Work*, by Adelyn Dohme Breeskin, and *The Gem Collection*, by Paul E. Desautels, were published by the Smithsonian Institution Press.

**Series:** "Meet the Author" series opened at the Anacostia Neighborhood Museum with Mrs. Sharon Bell Mathis, local author of children's books, who presented a filmstrip, the popular *100 Penny Box*.

**Special Events:** Black History Month was observed with extensive activities at both the Anacostia Neighborhood Museum and the Museum of African Art.

#### February 2

**Exhibition:** *We'll Never Turn Back* opened at the National Museum of History and Technology. Sponsored by the Division of Performing Arts and Howard University, this show included the work of thirteen photographers of the Civil Rights movement.

**Symposium:** *Ice Age Art: The Roots of Culture* was held in conjunction with the installation of Smithsonian Institution Traveling Exhibition Service's exhibition *Ice Age Art* at the Dallas Health and Science Museum. The symposium was cosponsored by the L. S. B. Leakey Foundation.

### February 3

**Event:** "Sculpture Sunday," held at the National Collection of Fine Arts, included demonstrations of stone carving, sculpture tours of the permanent collection, and improvisational dance performances exploring three-dimensional space.

### February 6

**Exhibition:** A Viking Lander, identical to the two that soft-landed on the surface of Mars in 1976, was placed on display in the Milestones of Flight gallery in the National Air and Space Museum.

### February 10

**Event:** "Architectural Arts Day," held at the National Collection of Fine Arts—whose building was begun in 1836—included architects designing wood and paper architectural layouts, docent-led tours of the building, concerts of nineteenth-century American music, and a neighborhood walking tour.

**Exhibition:** *American Light: The Luminist Movement, 1850–1875* opened at the National Gallery of Art.

### February 14

**Publication:** *Guide for Disabled People*, a new brochure providing information on museum access and programs for disabled visitors, was released by the Office of Public Affairs to augment the Smithsonian's general information brochure.

### February 17

**Exhibition:** *In Praise of America: Masterworks of American Decorative Arts, 1650–1825* opened at the National Gallery of Art.

### February 24

**Exhibition:** *American Decorative Arts: Renderings from the Index of American Design* opened at the National Gallery of Art.

### February 25

**Acquisition:** Agreement was reached whereby the Smithsonian Institution purchased, jointly with the Museum of Fine Arts, Boston, the portraits of George and Martha Washington painted from life by Gilbert Stuart.

### February 29

**Exhibition:** *Georg Jensen Silversmithy: 77 Artists, 75 Years*, opened at the Renwick Gallery. The exhibition catalogue was published by the Smithsonian Institution Press.

### March

**Exhibition:** The S.S. *Pussiewillow II*, a whimsical machine by British inventor and sculptor Rowland Emmett, was placed on display in the National Air and Space Museum's Flight and the Arts gallery.

**Grants:** National Museum Act recipients for special studies and professional grants were named.

**Energy Control:** A computerized system for monitoring and controlling energy consumption in major Smithsonian buildings in Washington was completed.



### March 3

**Exhibition:** *Waiting for the Hour*, dealing with events and personalities surrounding the formal issuance of Lincoln's Emancipation Proclamation, opened at the National Portrait Gallery.

### March 4

**Seminar:** "Modes of Speciation" was given by Dr. Ernst Mayr, Professor Emeritus of Harvard University, at the Smithsonian Tropical Research Institute, where Dr. Mayr presented an additional seminar entitled "Three Philosophies of Classification."

### March 5

**Concert Series:** The Royal Dancers and Musicians of the Kingdom of Bhutan appeared in the Division of Performing Art's World Explorer Series. This was the group's first tour in the Western Hemisphere.

### March 7

**Special Event:** A "Portrait Ball" was held in the Great Hall of the National Portrait Gallery, sponsored by the Contributing Membership, Smithsonian National Associate Program.

### March 8

**Traveling Exhibition:** *Sèvres Porcelain*, a SITES exhibition, opened at The Art Institute of Chicago. The accompanying catalogue, done by the Smithsonian Institution Press, was the first English-language publication exclusively on Sèvres porcelain.

### March 13

**Appointments:** Dr. William G. Bowen and Carlisle H. Humelsine were appointed as citizen members of the Smithsonian Board of Regents.

### March 14

**Exhibition:** Office of Horticulture Flower Show exhibit *Florafest I* opened at the United States Botanical Garden.

### March 20

**Exhibition:** *Miró: Selected Paintings* opened at the Hirshhorn Museum and Sculpture Garden. The illustrated exhibition catalog by Charles Millard was published by the Smithsonian Institution Press.

**Exhibition:** *Masterworks of Korean Art* opened at the Freer Gallery of Art.

### March 22

**Special Event:** The fourteenth annual Kite Carnival, with competition and prizes, was held on the Washington Monument Grounds under sponsorship of the Resident Associate Program.

### March 22-23

**Symposium:** A weekend symposium on *Nineteenth-Century American Cabinetmakers* was cosponsored by the Cooper-Hewitt Museum, and PB Eighty-four, a division of Sotheby Parke Bernet Inc.

### March 26

**Exhibition:** Early Flight Gallery, a major new exhibition at the National Air and Space Museum, opened, recreating a 1913 indoor aeronautical trade show.

## March 29–30

**Exhibition:** The Regional Events Program of the Smithsonian National Associate Program presented a two-day exhibition of historic jewelry from the National Gem Collection—at the Witte Memorial Museum, San Antonio.

## April

**Agreement:** Secretary S. Dillon Ripley visited Cuba and signed a Memorandum of Understanding with the Cuban Academy of Sciences restoring scholarly exchanges interrupted in 1969 when the United States and Cuba severed relations.

**Milestone:** *Smithsonian* magazine marked its tenth anniversary. The magazine now has a circulation of 1.8 million subscribers.

**Symposium:** Sixteen prominent American anthropologists and historians gathered at the National Museum of Natural History for a public symposium on the archeology and ethnology of the Plains Indians.

**Exhibition:** *The Conquest of Land* opened at the National Museum of Natural History, first phase in a major renovation and redesign of the museum's paleontology halls.

**Outreach:** An Educational Outreach Program was initiated at the Smithsonian Astrophysical Observatory's installation at Mount Hopkins.

## April 1

**Exhibition:** *The Nation's Attic* opened at the National Museum of History and Technology with examples of the oddities in Smithsonian collections.

## April 9

**Lecture:** Rosamond Bernier, art commentator and personal friend of the artist Miró, discussed the master and his work in "Joan Miró: A Personal Account by Rosamond Bernier," sponsored by the Resident Associate Program.

## April 10

**Exhibition:** *Seven Belgian Artists: Selections from the Hirshhorn Museum and Sculpture Garden* opened at the museum, in connection with the international symposium *Belgium Today*.

## April 14

**Symposium:** A symposium commemorating final stages of the project on the flora of Panama was held at the University of Panama, with organizational and financial support from the Smithsonian Tropical Research Institute. The four-day meeting represented fruition of thirty years of cooperation between the Missouri Botanical Garden and STRI.

## April 15

**Grant Awards:** The Office of Fellowships and Grants designated 1980–81 fellowship recipients.

## April 17

**Acquisition:** Portraits of Jefferson Davis and his wife, Varina Howell, President and First Lady of the Confederate States of America, were presented to the National Portrait Gallery by their great grandchildren, Varina Webb Stewart and Joel A. H. Webb.

**Exhibition:** *Alexandra Exter: Marionettes and Theatrical Designs* opened at the Hirshhorn Museum and Sculpture Garden.

#### April 19

**Special Event:** "Children's Day: A Turn in Time," an annual day for families, was held at the National Collection of Fine Arts. The day included participation in glassblowing, sculpting in wax, carving in stone, printmaking, and the creating of paper hats and stained glass.

#### April 19–20

**Performances:** The Regional Events Program of the Smithsonian National Associate Program sponsored outdoor performances of American folksongs and ballads at the Living History Farms as part of a week-long series of events for members in Des Moines.

#### April 20

**Symposium:** Keynote address by King Baudouin I of the Belgians opened the international symposium, *Belgium Today*, supported by grants from the National Endowment for the Humanities and the National Endowment for the Arts, and sponsored by the Resident Associate Program among other groups.

#### April 22

**Exhibition:** King Baudouin and Queen Fabiola of Belgium previewed the exhibition, *Marionettes in French Belgium Today*, at the Renwick Gallery of the National Collection of Fine Arts.

#### April 25–27

**Special Event:** A three-day "Spring Celebration" of clowns, sideshows, and acrobats was presented by the Division of Performing Arts and the National Museum of History and Technology.

#### April 28

**Research Event:** National Anthropological Film Center Director E. Richard Sorenson and research film specialist Barbara Y. Johnson presented to the Royal Nepal Academy "Jyapu: Industrious Productivity as Lifestyle," a preliminary research report film, Kathmandu, Nepal.

#### April 29

**Exhibition:** *Close Observation: The Oil Sketches of Frederic E. Church* opened at the Cooper-Hewitt Museum in New York.

#### May

**Education:** Seventh Annual Teachers' Day was observed at the Office of Elementary and Secondary Education.

**Publication:** The Office of Biological Conservation participated in the United States Interagency Task Force on Tropical Forests that produced a report on "The World's Tropical Forests: A Policy, Strategy, and Program for the United States."

**Special Event:** The beginning of the Year of the Monkey was noted with an exhibition of monkeys in Chinese and Japanese art at the Freer Gallery of Art.

**Special Event:** "The Return of Dom Pedro II," a procession on the National Mall and demonstration of African, Brazilian, and Indian cultural elements in American society, featured Jonas dos Santos and was sponsored by the Office of Smithsonian Symposia and Seminars.



### May 1

**Exhibition:** *American Portrait Drawings*, 96 drawings by 75 artists including Benjamin West, James A. McN. Whistler, and Willem de Kooning opened at the National Portrait Gallery.

**Special Event:** Symposium entitled *Lessons from Vietnam* featured journalist/historians discussing the military, political, and social implications of the Vietnam War. This event was sponsored by the Resident Associate Program.

### May 3–4

**Zoo Workshop:** The Regional Events Program of the Smithsonian National Associate Program organized a two-day workshop at the John Ball Park Zoo in Grand Rapids to aid the zoo in establishing a permanent animal education facility.

### May 4

**Opening:** The North American Mammals exhibit opened at the National Zoo.

### May 5

**Colloquium:** *The Pursuit of Knowledge* was presented by the first three recipients of Regents Fellowships. This Regents Fellows Colloquium was sponsored by the Office of Fellowships and Grants.

### May 5–7

**Workshop:** The Native American Museum Training Program conducted the second annual national workshop for the North American Indian Museums Association in Phoenix, Arizona.

### May 8

**Award:** *The Smithsonian Associate* newsletter was presented with the Metropolitan Area Mass Media (MAMM) award for excellence in locally produced educational publications by the American Association of University Women. The newsletter is published monthly by the Resident Associate Program.

**Exhibition:** *Chinese Calligraphy* opened at the Freer Gallery of Art.

**Concert Series:** The 20th Century Consort performed in Alice Tully Hall, as part of the New York Concert Series presented by the Division of Performing Arts, with special guest Hermione Gingold.

### May 9

**Exhibition:** Screenings of a new program "New Eyes on the Universe" began in the National Air and Space Museum's Albert Einstein Spacearium.

### May 13

**Event:** Honors Ceremony for 1979–80 Smithsonian Fellows was held by the Office of Fellowships and Grants.

### May 14

**Symposium:** *Preservation: Reusing America's Energy*, exploring how to save energy in the built environment through historic preservation, was held under sponsorship of the Resident Associate Program.

### May 15

**Lecture:** Paul B. McCready was the National Air and Space Museum's third annual Grierson Memorial lecturer. Dr. McCready designed the first human-powered aircraft, the *Gossamer Condor*, and the first human-powered aircraft to fly the English Channel, the *Gossamer Albatross*.

### May 17-18

**Special Event:** Artificial insemination of the female giant panda, Ling-Ling, was unsuccessfully attempted after repeated efforts at natural breeding failed.

### May 18

**Exhibition:** *Japanese Fans* opened at the Freer Gallery of Art.

### May 22

**Exhibition:** *The Fifties: Aspects of Painting in New York* opened at the Hirshhorn Museum and Sculpture Garden.

### May 24-25

**Concert Series:** An all-Ellington evening was performed by the Smithsonian Jazz Repertory Ensemble in a Jazz Heritage Series concert presented by the Division of Performing Arts.

### May 25

**Exhibition:** *Post-Impressionism: Cross-Currents in European and American Painting, 1880-1906* opened at the National Gallery of Art.

### May 27

**Library Tour:** A "Collectors Tour" of the Dibner Library of the History of Science and Technology, honoring Dr. Bern Dibner and led by him, was sponsored by the Contributing Membership, Smithsonian National Associate Program.

### May 28-30

**Workshop:** The Native American Museum Training Program conducted the Northern Plains Regional workshop in Cody, Wyoming.

### June

**Expedition:** Secretary Ripley took part in the Chinese Academia Sinica Symposium on the Qinghai-Xizang (Tibet) Plateau and in a survey of the plateau itself.

**Volcano Watch:** National Museum of Natural History volcanologists held two illustrated public briefings on the Mount Saint Helens eruption, drawing near-capacity crowds to Baird Auditorium.

**Education:** Chesapeake Bay Center for Environmental Studies held its second annual "Afternoon Behind the Scenes" community open house featuring "hands on" activities at the dock, field tours with scientists, research briefs, and slide overviews.

**Milestone:** Complete conversion of the Smithsonian Institution's telephone system to new equipment, including a change of numbers for all bureaux and offices, was effected.

### June 2

**Dedication:** National Air and Space Museum's Silver Hill Facility was renamed the Paul E. Garber Facility in honor of NASM's Historian Emeritus. Mr. Garber joined the Smithsonian in 1920 and was responsible for acquiring a large portion of its aeronautical collection.

### June 3

**Broadcast:** The Office of Telecommunications' *Smithsonian Galaxy* increased distribution to 168 stations in forty states and the Canadian Forces Network in Germany.

**Reauthorization:** The National Museum Act was reauthorized for fiscal years 1981 and 1982.

#### June 4

**Exhibition:** *Brancusi as Photographer* opened at the Hirshhorn Museum and Sculpture Garden.

**Exhibition:** *Across the Nation: Fine Art for Federal Buildings, 1972–1979*, opened at the National Collection of Fine Arts.

#### June 5

**Exhibition:** *Zelda and Scott: The Beautiful and Damned*, 72 items featuring portraits, manuscripts, and memorabilia of the Fitzgeralds, went on display at the National Portrait Gallery.

#### June 10

**Exhibition:** *Hair*, a show with some 350 objects on the history of hair styles, opened at the Cooper-Hewitt Museum in New York.

**Special Event:** Cooper-Hewitt Museum participated in "Museum Mile," a street festival and celebration by New York's cultural institutions on Fifth Avenue; the Avenue was closed to traffic between 86th Street and 106th Street from 7:00 to 9:00 P.M.

#### June 11–15

**Performances:** The Office of Folklife Programs sponsored a sequence of folk puppetry performances on the National Mall and a scholarly conference on world traditions in folk puppetry in the National Museum of History and Technology. These activities were scheduled in conjunction with the 13th World Congress of UNIMA (L'Union Internationale de la Marionnette), held for the first time in the Western Hemisphere.

#### June 14

**Special Event:** Seventh Annual Boomerang Throw, with workshops and competition, took place on the National Mall under sponsorship of the Resident Associate Program.

#### June 17, 22

**Study:** The Visitor Information and Associates' Reception Center cooperated with the Department of Urban and Regional Planning of the George Washington University to study the need for auxiliary transportation between National Mall museums for visitors with ambulatory difficulties.

#### June 19

**Ecology Project:** Six young peregrine falcons were placed on the tower of the Smithsonian Institution Castle Building in a project of the Peregrine Fund at Cornell University in an attempt to reestablish a wild breeding population of these falcons on the east coast.

**Exhibition:** *Thomas Wilmer Dewing* opened at the Freer Gallery of Art.

#### July

**New Directions:** Federal Equal Opportunity Recruitment Program was approved by Secretary Ripley and issued for implementation.

**Program:** "How Children Learn a Sense of Justice," presentation in the continuing series on "Voluntarism and the Public Interest in American Society," was cosponsored by the Office of Smithsonian Symposia and Seminars and the Child and Family Justice Project of the National Council of Churches.



**Redesign:** *Torch*, the Smithsonian's in-house newspaper now in its 26th year, was redesigned to update its appearance and enhance its usefulness and readability.

**Publication:** *A Bestiary for Saint Jerome*, a distinguished work of scholarship by a former Smithsonian scholar, was published by the Smithsonian Institution Press.

**Research:** The Office of Biological Conservation completed a preliminary study of the deforestation occurring in Sabah (North Borneo) and resultant associated threats to the environment.

**Education:** The Office of Elementary and Secondary Education held national teacher workshops and also conducted summer programs for hearing-impaired children.

#### July 1

**Exhibition:** A mini-exhibition of eighteen paintings by noted space artist Chesley Bonestell was put on display in the Independence Lobby of the National Air and Space Museum.

#### July 3-6

**Special Event:** A traditional Fourth of July Celebration, cosponsored by the National Museum of History and Technology and the Division of Performing Arts, featured music, demonstrations, films, and special tours.

#### July 4

**Opening:** Gilbert Stuart's portraits of George and Martha Washington went on display at the National Portrait Gallery.

**Exhibition:** *Unsuccessful Candidates for the Presidency, 1912-1976* opened at the National Portrait Gallery.

#### July 7

**Evaluation:** Status report on the Multiple Mirror Telescope's performance was presented to a professional meeting of astronomers and the instrument was hailed for its "high resolution" and the Mount Hopkins site's "exceptional seeing."

#### July 10

**Opening:** The Naos Seawater System was inaugurated by Smithsonian Tropical Research Institute Director Dr. Ira Rubinoff and Panamanian President Dr. Aristides J. Royo Ruiz; present also was Acting Smithsonian Secretary Phillip S. Hughes.

#### July 14

**Exhibition:** *Two Centuries of Japanese Ceramics, 1550-1750* opened at the Freer Gallery of Art.

#### July 14-18

**Workshop:** A five-day workshop for museum archivists was sponsored by the Smithsonian Archives.

#### July 23

**Exhibition Opening:** *A Victorian Horticultural Extravaganza*, the first Smithsonian horticulture exhibit, opened in the Arts and Industries Building.

**Presentation:** A 1959 Harry Bertoia sculpture symbolizing world communications in the atomic age was given to the National Collection of Fine Arts by the Zenith Radio Corporation.

## July 30

**Traveling Exhibition:** *Western Views and Eastern Visions*, a SITES exhibition, opened at the National Museum of History and Technology.

## August

**Seminar:** "Interdisciplinary Seminar on Cultural and Curriculum Resources at the Smithsonian Institution," designed for a group of graduate and undergraduate students at the University of Hawaii, was sponsored by the Office of Smithsonian Symposia and Seminars.

**Handicapped Access:** A new system of ramps and automated doors went into operation at the Constitution Avenue entrance of the National Museum of Natural History, giving the museum's handicapped visitors better access to the building.

**Acquisition:** The Henry Murray estate added 128 acres to the Chesapeake Bay Center's landholdings for education and research programs.

**Publication:** *The Directory of Smithsonian Fellows* was issued by the Office of Fellowships and Grants.

## August 1

**Renovation:** Small Mammal House renovation began at the National Zoo.

## August 7

**Telecast:** *Reunions: Memories of an American Experience*, produced by the Office of Telecommunications and the Motion Picture Unit of the Office of Exhibits Central, was distributed by satellite to 124 PBS television stations.

## August 13–15

**Workshop:** The Native American Museum Training Program conducted the West Coast Regional workshop in Seattle, Washington.

## August 18

**Exhibition:** *Art of the Arab World* opened at the Freer Gallery of Art.

## August 21

**Exhibition:** *New York: The Artist's View* opened at the Hirshhorn Museum and Sculpture Garden.

## August 22

**Exhibition:** *Why Not a Woman?*, a small exhibition focusing on Belva Ann Lockwood, the first woman to practice before the Supreme Court and the first woman to mount a formal candidacy for president of the United States, opened at the National Portrait Gallery.

## August 31

**Special Event:** Frisbee Festival, the largest noncompetitive disc event in the world, was held on the National Mall by the National Air and Space Museum.

**Exhibition:** *The Morton G. Neumann Family Collection* went on view at the National Gallery of Art.

## September

**Education:** Cooperative Education Program's first minority work-study students arrived at the Smithsonian to begin their respective programs.

## September 2

**Exhibition:** *Electroworks*, a show of some 250 works tracing the development of copy machine art, opened at the Cooper-Hewitt Museum in New York.

#### September 4

**Exhibition:** *Ancient Chinese Jades* opened at the Freer Gallery of Art.

#### September 6

**Special Event:** An all-day symposium on UFO's with panel members, both proponents and skeptics, discussing thirty years of UFO investigation was sponsored by the Resident Associate Program.

#### September 8

**Pilot Program:** First year began of the Smith College / Smithsonian Institution Program in American Studies.

#### September 12

**Traveling Exhibition:** *Berlin Porcelain*, a SITES exhibition, began its United States tour at the Renwick Gallery.

#### September 18

**Exhibition:** *Edwin Dickinson: Selected Landscapes* opened at the Hirshhorn Museum and Sculpture Garden.

**Exhibition and Symposium:** A symposium on *Modern American Woodcuts* was held at the National Collection of Fine Arts in conjunction with its exhibition, *Max Weber: Prints and Color Variations*.

#### September 21

**Award:** Caryl P. Haskins, scientist, educator, and author, was awarded the Joseph Henry Medal in recognition of his contributions to the Smithsonian Institution as a Regent for more than twenty-four years.

#### September 23

**Film:** The Office of Telecommunications' *A Sense of Discovery*, *The National Collection of Fine Arts* was completed.

**Exhibition:** *In Touch: Printing and Writing for the Blind in the 19th Century* opened at the National Museum of History and Technology.

#### September 26

**Event:** The James Smithson Society held its annual banquet and presented awards.

#### September 29-30

**Seminar:** "Ceramics as Archeological Material," organized by the Conservation Analytical Laboratory in association with the National Measurement Laboratory of the National Bureau of Standards, was one of a continuing series on the general subject of the application of the materials and measurement sciences to archeology and museum conservation.

#### September 30

**Film Release:** *Dragon of the Trees: The Green Iguana*, an animal behavior film produced by the Office of Telecommunications, was released.

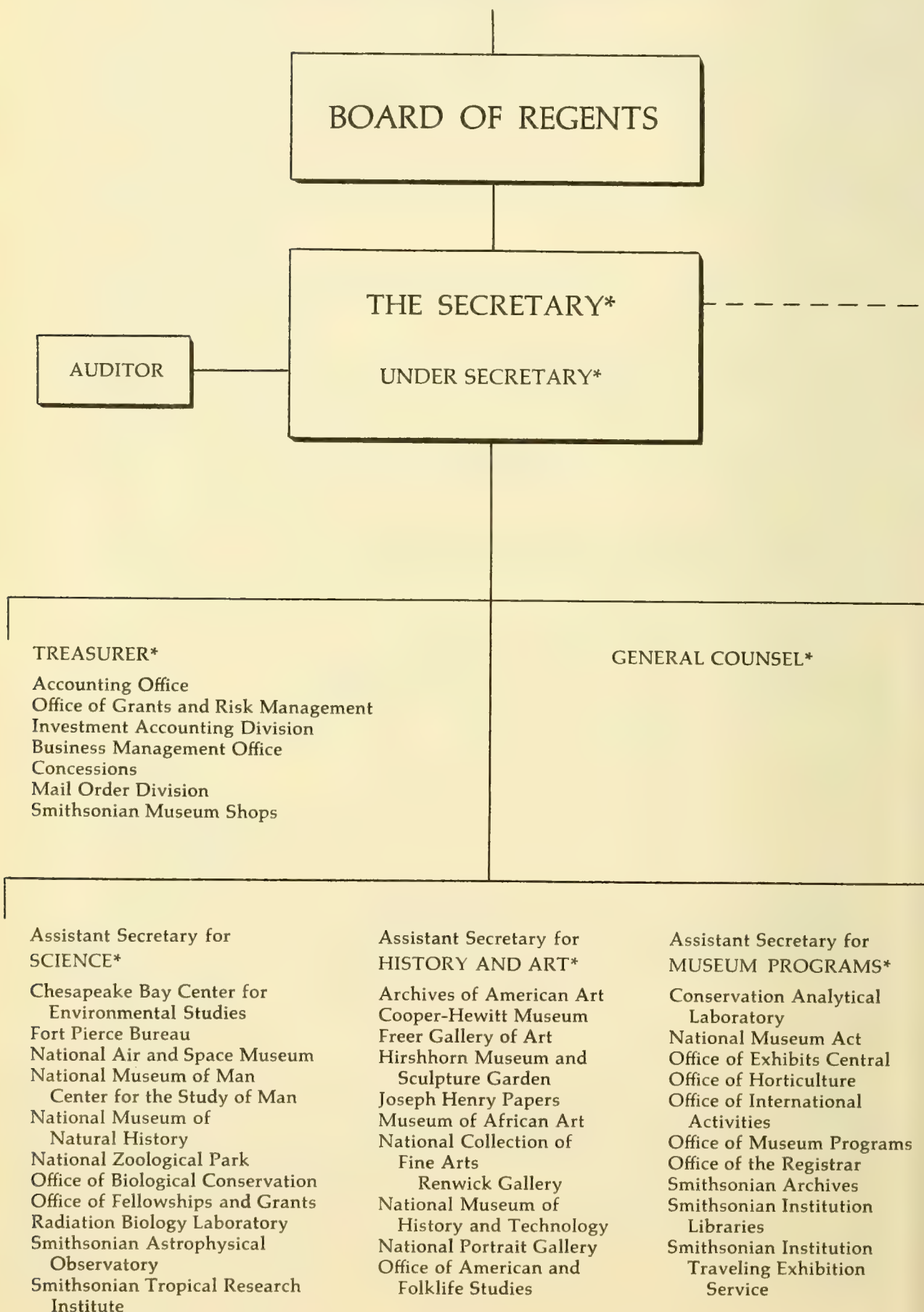
**Evaluation:** A survey disclosed that articles from the Smithsonian News Service, begun in October 1979, were now being published in more than 1425 newspapers in all fifty states with a combined circulation of 40 million (90 million potential readers).



APPENDIXES

Organization Chart	<i>page</i> 364
1. Members of the Smithsonian Council, Boards, and Commissions, September 30, 1980	366
2. Smithsonian Special Foreign Currency Program Awards Made October 1, 1979, through September 30, 1980	374
3. National Museum Act Grants Awarded in Fiscal Year 1980	378
4. Publications of the Smithsonian Institution Press in Fiscal Year 1980	380
5. Publications of the Staff of the Smithsonian Institution and Its Subsidiaries in Fiscal Year 1980	390
6. Academic and Research Training Appointments in Fiscal Year 1980	453
7. Benefactors of the Smithsonian Institution in Fiscal Year 1980	469
8. Donors to the Smithsonian Institution in Fiscal Year 1980	491
9. Visitors to the Smithsonian Institution in Fiscal Year 1980	556
10. The Smithsonian Institution and Its Subsidiaries, September 30, 1980	557

# SMITHSONIAN INSTITUTION



\* Secretary's Executive Committee

Under Separate Boards of Trustees:

JOHN F. KENNEDY CENTER  
FOR THE PERFORMING ARTS

NATIONAL GALLERY OF ART

WOODROW WILSON  
INTERNATIONAL CENTER  
FOR SCHOLARS

SMITHSONIAN  
SCIENCE INFORMATION  
EXCHANGE, INC.

Coordinator of  
PUBLIC INFORMATION\*

Office of Congressional Liaison  
Office of Public Affairs  
Office of Special Events

Director of  
MEMBERSHIP AND DEVELOPMENT\*

Development Office  
Smithsonian National Associate  
Program  
Smithsonian Resident Associate  
Program

Assistant Secretary for  
PUBLIC SERVICE\*

Anacostia Neighborhood Museum  
Division of Performing Arts  
International Exchange Service  
Office of Elementary and Secondary  
Education  
Office of Smithsonian Symposia and  
Seminars  
Office of Telecommunications  
Smithsonian Exposition Books  
Smithsonian Institution Press  
*Smithsonian Magazine*  
Visitor Information and Associates'  
Reception Center

Assistant Secretary for  
ADMINISTRATION\*

Office of Computer Services  
Contracts Office  
Office of Equal Opportunity  
Office of Facilities Services  
Office of Design and Construction  
Office of Plant Services  
Office of Protection Services  
Management Analysis Office  
Office of Personnel Administration  
Office of Printing and Photographic  
Services  
Office of Programming and Budget  
Office of Supply Services  
Travel Services Office



APPENDIX 1. *Members of the Smithsonian Council, Boards,  
and Commissions, September 30, 1980*

SMITHSONIAN INSTITUTION BOARD OF REGENTS

Warren E. Burger, *The Chief Justice of the United States, ex officio, Chancellor\**  
Walter F. Mondale, *The Vice President of the United States, ex officio*

Henry M. Jackson, *Senator from Washington*  
Barry Goldwater, *Senator from Arizona*  
Robert B. Morgan, *Senator from North Carolina*

Silvio O. Conte, *Representative from Massachusetts*  
Norman Y. Mineta, *Representative from California*  
Frank Thompson, Jr., *Representative from New Jersey*

Anne L. Armstrong, *citizen of Texas*  
J. Paul Austin, *citizen of Georgia*  
William G. Bowen, *citizen of New Jersey*  
William A. M. Burden, *citizen of New York\**  
Murray Gell-Mann, *citizen of California*  
A. Leon Higginbotham, Jr., *citizen of Pennsylvania*  
Carlisle H. Humelsine, *citizen of Virginia\**  
James E. Webb, *citizen of the District of Columbia\*\**

SMITHSONIAN COUNCIL

Gordon N. Ray, <i>Chairman</i>	Frank B. Golley	David R. Pilbeam
Dore Ashton	Stephen Jay Gould	Vera C. Rubin
Milton W. Brown	Neil Harris	Carl E. Sagan
Frederick H. Burkhardt	August Heckscher	Carl E. Schorske
William H. Davenport	Nathan I. Huggins	Andre Schiffrin
Anne d'Harnoncourt	Ada Louise Huxtable	Gunther Schuller
Richard M. Dorson	George F. Lindsay	Barbara W. Tuchman
A. Hunter Dupree	Peter Marler	
	Ruth Patrick	

ARCHIVES OF AMERICAN ART BOARD OF TRUSTEES

Mrs. Otto L. Spaeth, <i>Chairman</i>	Mr. Henry deForest Baldwin, <i>Treasurer</i>
Mr. Gilbert H. Kinney, <i>President</i>	Mrs. Dana M. Raymond, <i>Secretary</i>
Mrs. Nancy B. Negley, <i>Vice President</i>	S. Dillon Ripley, <i>ex officio</i>
Mr. A. Alfred Taubman, <i>Vice President</i>	Charles Blitzer, <i>ex officio</i>

---

\* Member of the Executive Committee.

\*\* Mr. Webb is Chairman of the Executive Committee.

Dr. Irving F. Burton  
 Mrs. Alvin M. Ferst, Jr.  
 Mr. Joel S. Ehrenkranz  
 Mrs. Walter B. Ford II  
 Mrs. Joseph Hirshhorn  
 Mr. Irvin A. Levy  
 Mr. Howard W. Lipman  
 Mr. Harold O. Love  
 Mr. Richard Manoogian

Mrs. Walter Maynard, Jr.  
 Mr. Porter A. McCray  
 Dr. Abraham Melamed  
 Mrs. William L. Mitchell  
 Mrs. Muriel Kallis Newman  
 Mrs. Robert F. Shapiro  
 Mr. Frederic A. Sharf  
 Mrs. Louise Talbot Trigg  
 Mr. John Lowell Jones

#### FOUNDING TRUSTEES

Lawrence A. Fleischman

E. P. Richardson

Mrs. Edsel B. Ford

#### HONORARY TRUSTEES

Mrs. William L. Richards

Mr. Russell Lynes

### ARCHIVES OF AMERICAN ART ADVISORY COMMITTEE

#### NEW YORK

Milton Brown,  
*Chairman*  
 John Baur  
 Frederick Cummings  
 John Dobkin  
 Anne d'Harnoncourt  
 William Gerdtz  
 Lloyd Goodrich  
 Eugene Goossen

James J. Heslin  
 John Howat  
 James Humphry III  
 Bernard Karpel  
 John A. Kouwenhoven  
 Abram Lerner  
 Russell Lynes  
 A. Hyatt Mayor  
 Barbara Novak

Clive Phillpot  
 Jules D. Prown  
 J. T. Rankin  
 Marvin Sadik  
 Joshua Taylor  
 Charles van Ravenswaay  
 William B. Walker  
 Richard P. Wunder

#### NEW ENGLAND

Harley P. Holden,  
*Chairman*  
 Winslow Ames  
 Mr. and Mrs.  
 George H. Bumgardner  
 Charles Ferguson  
 Wolfgang M. Freitag  
 Hugh Gourley

Elton W. Hall  
 Patricia Hills  
 Sinclair Hitchings  
 John Kirk  
 William Lipke  
 Kenworth Moffett  
 Elliott Offner  
 James O'Gorman

Stephen Prokopoff  
 Stephen Riley  
 Laurence Schmeckebier  
 Theodore Stebbins  
 Richard Teitz  
 Bryant F. Tolles  
 Peter Wick  
 Margaret Craver Withers

#### NORTHERN CALIFORNIA

Wesley Chamberlin,  
*Chairman*  
 Stanley Andersen  
 Joseph Baird  
 Herschel Chipp  
 Van Deren Coke  
 Wanda Corn

James Elliott  
 Albert Elsen  
 Alfred Frankenstein  
 Lanier Graham  
 Henry Hopkins  
 Robert Emory Johnson  
 Martha Kingsbury

George Neubert  
 Peter Selz  
 Kevin Starr  
 Don Stover  
 Harvey West  
 Ian White

#### SOUTHERN CALIFORNIA

Donelson Hoopes,  
*Chairman*  
 E. Maurice Bloch  
 Carl Dentzel  
 Beatrice Farwell

Burton Fredericksen  
 Thomas H. Garver  
 David Gebhard  
 Constance W. Glenn  
 Susan C. Larsen

Paul Mills  
 Earl A. Powell III  
 Moira Roth  
 Maurice Tuchman  
 Robert R. Wark

WASHINGTON, D.C.

Bernard Mergen,  
*Chairman*  
Lorraine Brown  
David Driskell  
Lois Fink

Henry Glassie  
William Homer  
Charles Hummell  
Peter Marzio  
Peter Mooz

Marc Pachter  
Marvin Sadik  
Phoebe Stanton  
Joshua Taylor  
John Wilmerding

BOARD OF FELLOWSHIPS AND GRANTS

Thomas Lawton,  
*Chairman*  
David Correll  
John Eisenberg

Richard Fiske  
Roger Kennedy

David Challinor,  
*ex officio*  
Charles Blitzer,  
*ex officio*

COOPER-HEWITT MUSEUM ADVISORY COUNCIL

August Heckscher,  
*Chairman*  
Rosemary Corroon  
Joanne DuPont  
Harmon Goldstone

Karen Keland  
Russell Lynes  
Gilbert C. Maurer  
Kenneth Miller  
Amanda Ross

Arthur Ross  
Robert Sarnoff  
Marietta Tree  
S. Dillon Ripley,  
*ex officio*

FOLKLIFE ADVISORY COUNCIL

Wilcomb E. Washburn,  
*Chairman*  
Roger Abrahams  
Richard Ahlborn  
Richard Dorson

William Fitzhugh  
Lloyd Herman  
Robert Laughlin  
Scott Odell

Ralph Rinzler  
Peter Seitel  
Richard Sorenson  
Thomas Vennum

FREER VISITING COMMITTEE

Mrs. Jackson Burke  
Kwang-chih Chang  
Marvin Eisenberg  
Murray Gell-Mann

Katharine Graham  
Norman Y. Mineta  
John M. Rosenfield  
Hugh Scott

Laurence Sickman  
Priscilla P. Soucek  
John S. Thacher  
Richard Weatherhead

HIRSHHORN MUSEUM AND SCULPTURE GARDEN  
BOARD OF TRUSTEES

Daniel P. Moynihan,  
*Chairman*  
Sydney Lewis,  
*Vice Chairman*

Leigh B. Block  
Anne d'Harnoncourt  
Thomas M. Evans

Jerome Greene  
Olga Hirshhorn  
Dorothy C. Miller

Warren E. Burger, *Chief Justice of the United States, ex officio*  
S. Dillon Ripley, *Secretary, Smithsonian Institution, ex officio*  
Joseph H. Hirshhorn, *Trustee Emeritus*

HORTICULTURE ADVISORY COMMITTEE

Jimmie L. Crowe  
Belva Jensen

Carlton Lees  
Donald Parker

Robert Read

ORCHID SUBCOMMITTEE

Paul Desautels

Robert Read

Mary Ripley



JOINT SPONSORING COMMITTEE FOR THE PAPERS  
OF JOSEPH HENRY

Frederick Seitz, <i>Chairman</i>	Lee Anna Blick Charles Blitzer	S. Dillon Ripley Henry D. Smyth
Whitfield J. Bell, Jr.		

MUSEUM OF AFRICAN ART COMMISSION

Lee Bronson	Frances Humphrey	Roy Sieber
Beverly W. Carter	Howard	Walter Washington
David Driskell	Richard Long	Franklin Williams
John B. Duncan	Frank Moss	Charles Blitzer, <i>ex officio</i>
Carl Freeman	Milton Ratnor	S. Dillon Ripley, <i>ex officio</i>
S. I. Hayakawa	Thomas Schwab	

MUSEUM OF AFRICAN ART NATIONAL COUNCIL

Joseph James Akston	Alex Haley	John Reinhardt
Arthur Ashe	George Haley	Stellita Renchard
James Avery	Eliot Halperin	Norman B. Robbins
Ernie Barnes	Philip Handler	Harold Rome
Saul Bellow	Geoffrey Holder	Bayard Rustin
Julian Bond	Rep. Frank Horton	Senator Hugh Scott
Rep. John Brademas	Muriel Humphrey	Stanley Scott
Dona Bronson	David Lloyd Kreeger	Evelyn Sessler
Edward W. Brooke	Jacob Lawrence	Mabel Smythe
Joseph Campbell	Vera List	Michael Sonnenreich
Rep. John Conyers	J. Bruce Llewellyn	David Stratmon
Ossie Davis	Stanley Marcus	Lynette Taylor
Lula Dawson	Mary McFadden	Anne Teabeau
Rep. Ronald Dellums	Robert McNamara	Maurice Tempelsman
Barbaralee Diamonstein	Rae Alexander Minter	Paul Tishman
Rep. Charles Diggs	Clarence Mitchell	Sterling Tucker
Ofield Dukes	Rep. Parren Mitchell	Mike Wallace
Joanne duPont	Nancy Negley	Barbara Watson
Ralph Ellison	Mace Neufeld	G. Mennen Williams
John Hope Franklin	Dorothy Porter	Isabel Wilson
Buckminster Fuller	Vincent Price	Lester Wunderman
James Gibson	Benjamin Quarles	Elizabeth Bouey Yates
Dick Gregory	Milton Ratner	Andrew Young
Chaim Gross	Michael Rea	Nicholas Zervas
Lily Polk Guest	Saunders Redding	

NATIONAL AIR AND SPACE MUSEUM ADVISORY BOARD

Mr. S. Dillon Ripley, <i>Chairman</i>	Mr. Gerald D. Griffen
Mr. Albert P. Albrecht	Vice Adm. Wesley L. McDonald
Mrs. O. A. Beech	Lt. Gen. Elwood Quesada, <i>USAF (Ret.)</i>
Brig. Gen. James L. Collins	Vice Adm. Robert H. Scarborough
Brig. Gen. Archer L. Durham	Lt. Gen. William J. White

NATIONAL AIR AND SPACE MUSEUM VISITING COMMITTEE

Dr. Alexander H. Flax	Lt. Gen. James T. Stewart,
Dr. Gerard K. O'Neill	<i>USAF (Ret.)</i>
Dr. Leon T. Silver	Dr. Richard R. Whitcomb

NATIONAL ANTHROPOLOGICAL FILM CENTER  
ADVISORY COUNCIL

Sol Tax, <i>Chairman</i>	Phoebe Ellsworth	Norman Miller
Matthew Huxley, <i>Secretary</i>	Gordon Gibson	Phileo Nash
Ira Abrams	Edward T. Hall	Marion Stirling Pugh
T. Berry Brazelton	Glenn Harnden	Jerrold Schecter
Roma Crocker	Stephen P. Hersh	Hubert Smith
William H. Crocker	Paul Hockings	George Spindler
Herbert Di Gioia	Bennetta Jules-Rosette	Colin Turnbull
	Peter Marzio	Carroll W. Williams
	Constance B. Mellon	Joan Swayze Williams

NATIONAL ARMED FORCES MUSEUM ADVISORY BOARD

Clifford J. Alexander, *Secretary of the Army*  
Edward Hidalgo, *Secretary of the Navy*  
Hahns Mark, *Secretary of the Air Force*  
Andrew Goodpaster, *Lt. Gen., US Army*  
William I. Greener, Jr.  
William H. Perkins, Jr.  
Theodore Ropp  
James M. Stone, Sr.  
Harold Brown, *Secretary of Defense, ex officio*  
S. Dillon Ripley, *Secretary, Smithsonian Institution, ex officio*

ADVISORY COUNCIL FOR THE NATIONAL MUSEUM ACT

Paul N. Perrot, <i>Chairman</i>	Joel N. Bloom	Thomas N. Maytham
George Abrams	Marigene Butler	Jan K. Muhlert
Craig C. Black	Philip S. Humphrey	Paul E. Rivard
	Watson Laetsch	F. Christopher Tahk

NATIONAL BOARD OF THE SMITHSONIAN ASSOCIATES

William S. Anderson, <i>Chairman</i>	James A. Elkins, Jr.	Scott McVay
Henry C. Beck, Jr.	Gordon Hanes	John R. Norton III
Nicholas F. Brady	Mr. John F. Harrigan	George S. Pillsbury
Keith S. Brown	Richard D. Hill	H. Smith Richardson, Jr.
Mrs. Jackson Burke	Mrs. Henry L. Hillman	Arthur A. Seeligson, Jr.
Mrs. Charles H. Clark	Carla Anderson Hills	David E. Skinner
E. Mandell deWindt	Samuel C. Johnson	Roger B. Smith
Gaylord Donnelley	James M. Kemper, Jr.	Mrs. E. Hadley Stuart, Jr.
G. Morris Dorrance, Jr.	Seymour Knox III	Vernon Taylor, Jr.
	Mrs. Robert A. Magowan	Parke Wright

HONORARY MEMBERS

Richard P. Cooley	William A. Hewitt	Francis C. Rooney, Jr.
Joseph F. Cullman 3rd	Mrs. Lyndon B. Johnson	Merritt Kirk Ruddock
Leonard K. Firestone	Lewis A. Lapham	Thomas J. Watson, Jr.
Alfred C. Glassell, Jr.	George C. McGhee	

## NATIONAL COLLECTION OF FINE ARTS COMMISSION

George B. Tatum, <i>Chairman</i>	Walker Hancock	Nan Tucker McEvoy
Mrs. Hiram W. McKee, <i>Vice Chairman</i>	R. Philip Hanes, Jr.	Philip Pearlstein
S. Dillon Ripley, <i>Secretary</i>	Bartlett H. Hayes, Jr.	Charles H. Sawyer
Donald Anderson	August Heckscher	George Segal
Elizabeth Brooke Blake	Mrs. Robert Homans	Mrs. Oliver Seth
Thomas S. Buechner	Thomas C. Howe	Mrs. John Farr Simmons
Lloyd Goodrich	Jaquelin H. Hume	Mrs. Otto L. Spaeth
	Richard L. Hunt	Mrs. Charles Bagley
	David Lloyd Kreeger	Wright
	Abram Lerner, <i>ex-officio</i>	

### HONORARY MEMBERS

Martin Friedman	Paul Mellon	Edgar P. Richardson
Henry P. McIlhenny	Ogden Pleissner	Andrew Wyeth

## NATIONAL PORTRAIT GALLERY COMMISSION

Senator Robert Morgan, <i>Chairman</i> <sup>1</sup>	Katie Louchheim	Robert H. Smith
Barry Bingham, Sr.	Robert L. McNeil, Jr.	Frank Stanton
Thomas Mellon Evans <sup>2</sup>	Andrew Oliver	Barbara Tuchman
	E. P. Richardson <sup>3</sup>	

J. Carter Brown, *Director, National Gallery of Art, ex officio*  
 Warren E. Burger, *Chief Justice of the United States, ex officio*  
 S. Dillon Ripley, *Secretary, Smithsonian Institution, ex officio*

## SMITHSONIAN FOREIGN CURRENCY PROGRAM ADVISORY COUNCILS

### *Archeology and Related Disciplines Advisory Council*

Esin Atil	George Dales	Daniel M. Neuman
Bennet Bronson	Thomas J. Hopkins	Edward Wente

### *Astrophysics and Earth Sciences Advisory Council*

Felix Chayes	Paul Hodge	Thornton Page
Henry Faul	William Klein	Victor Szebehely
George Field	William Melson	Louis Walter

### *Systematic and Environmental Biology Advisory Council*

D. A. Livingston	R. Ruibal	Richard H. Tedford
David L. Pawson	Beryl B. Simpson	Charles A. Triplehorn

## WOMEN'S COMMITTEE OF THE SMITHSONIAN ASSOCIATES

Mrs. Charles H. Clark, <i>Chairman</i>	Mrs. Frank B. Clay, <i>Assistant Secretary</i>
Mrs. James M. Collins, <i>Vice-Chairman</i>	Mrs. Parker T. Hart, <i>Treasurer</i>
Mrs. William S. Mailliard, <i>Secretary</i>	Mrs. Dudley Owen, <i>Assistant Treasurer</i>

<sup>1</sup> Appointed January 28, 1980.

<sup>2</sup> Appointed January 28, 1980.

<sup>3</sup> Resigned August 12, 1980.



Mrs. Donald Alexander  
 Mrs. William Alexander  
 Mrs. Charles Bartlett  
 Mrs. Denton Blair  
 Mrs. Philip Bowie  
 Mrs. Adelyn Dohme Breeskin  
 Mrs. Harrison Brand  
 Mrs. Townsend Burden III  
 Mrs. Thomas E. Crocker  
 Mrs. John Howard Dalton  
 Mrs. John Davidge  
 Mrs. Randolph A. Frank  
 Mrs. John Worden Gill  
 Mrs. C. Leslie Glenn  
 Mrs. Robert Reed Gray  
 Mrs. Karl G. Harr, Jr.  
 Mrs. Walter Hodges  
 Mrs. Robert Koehler  
 Mrs. Archie Lang  
 Mrs. J. Noel Macy  
 Mrs. Daniel Parker

Mrs. Jefferson Patterson  
 Mrs. Horace White Peters  
 Mrs. Malcolm Price  
 Mrs. Calvin Raullerson  
 Mrs. Edward Rich, Jr.  
 Mrs. S. Dillon Ripley  
 Mrs. Reynaldo Rodriquez  
 Mrs. Peter Russell  
 Mrs. John T. Sapienza  
 Mrs. Ray Scherer  
 Mrs. Leonard Silverstein  
 Mrs. Henry P. Smith III  
 Mrs. Wells Stabler  
 Mrs. James McKim Symington  
 Mrs. T. Graydon Upton  
 Mrs. Robert D. Van Roijen  
 Mrs. Charles Swan Weber  
 Mrs. Edwin M. Wheeler  
 Mrs. Philip C. White  
 Mrs. John Burke Wilkinson  
 Mrs. Robert S. Wilkinson

#### WOODROW WILSON INTERNATIONAL CENTER FOR SCHOLARS BOARD OF TRUSTEES

Max M. Kampelman, <i>Chairman</i>	Daniel J. Boorstin	Jesse H. Oppenheimer
Paul W. McCracken, <i>Vice Chairman</i>	Kenneth B. Clark	John E. Reinhardt
James A. Baker III	Joseph D. Duffey	S. Dillon Ripley
Theodore C. Barreaux	Stuart E. Eizenstat	Anne Firor Scott
	Patricia Roberts Harris	Robert M. Warner
	Edmund S. Muskie	

#### KENNEDY CENTER BOARD OF TRUSTEES

Roger L. Stevens, <i>Chairman</i>	Ralph Philip Hanes, Jr.	Mrs. Abraham A. Ribicoff
Mrs. Howard H. Baker	Orval Hansen	S. Dillon Ripley*
Marion Barry*	Patricia Roberts Harris*	Franklin D. Roosevelt, Jr.
K. Le Moyne Billings	Mrs. Paul H. Hatch	William H. Rumsey*
Daniel J. Boorstin*	Mrs. Bob Hope	Mrs. Jouett Shouse
Mrs. Edward T. Breathitt	Shirley M. Hufstедler	Mrs. Jean Kennedy Smith
J. Carter Brown*	Frank Ikard	John G. Spatuzza
Robert S. Carter	Edward M. Kennedy*	Henry Strong,
James C. Corman*	Melvin R. Laird	<i>Vice Chairman</i>
Mrs. Edward Finch Cox	Marjorie M. Lawson	Frank H. Thompson, Jr.*
Marshall Coyne	Joseph M. McDade*	Benjamin A. Trustman
Russell E. Dickenson*	Mrs. J. Willard Marriott	Jack Valenti
Mrs. J. Clifford Folger	Ronald H. Nessen	Harrison A. Williams, Jr.*
Abe Fortas	Charles H. Percy,	Mrs. Jack Wrather
Peter H. B. Frelinghuysen	<i>Vice Chairman*</i>	Mrs. George A. Garrett,
J. William Fulbright	Mrs. Donna Stone Pesch	<i>Honorary Trustee</i>
	John E. Reinhardt*	

\* *Ex officio*

*President's Advisory Committee on the Arts*

Gary Jay Northrop Aamodt	Alyne Queener Massey
Clark D. Ahlberg	Dorothy Watson McClure
Arthur D. Amiotte	Maureen McIntyre
Marlin Arky	Alice Greene McKinney
Elizabeth W. Blass	Dorothy Pierce McSweeney
William L. Bonyun	Jose F. Mendez
Francis T. Borkowski	Luis E. Mestre
Anne Marie Boyden	Robert I. Millonzi
Mary Louise Chaney	G. Joseph Minetti
Carolyn G. Clark	Chase Mitchell Mishkin
Maurice C. Clifford	Arlene Montgomery Mmahat
Kelly Cohen	Joan Reed Momjian
Paul Collins	Ana Marta Morales
Esther Lipsen Coopersmith	Christopher J. Murphy III
Susanne Shutz Curry	Elizabeth R. Ochenrider
Henry Cutler	Patrick J. O'Connor
Mitchell S. Cutler	Jacqueline D. O'Reilly
George F. Daviglus	Eduardo J. Padron
Clarence C. Day	Jographia Pappas
Patricia O'Reilly Diaz	Elizabeth Petrie
Jennie Taber Clarkson Dreher	Paul C. Porter
Walter J. Dunfey	Sumner Murray Redstone
Earl Eugene Dyson	Ann K. Regan
Patricia G. Edington	Barbara B. Rogers
Paula H. Elkins	Marina O. Rubal
Elizabeth Evans	Marjorie B. Runnion
Frank E. Fowler	Fred Rzepka
Christine Miles Gitlin	Manuel Sanchez
Robert F. Goldhammer	Milton T. Schaeffer
Sharon Kaye Gowdy	Kerin Rodgers Scianna
Carolyn B. Haffenreffer	Carole J. Shorenstein
Paul Halpern	Ted Simon
Edythe C. Harrison	Judy Glissen Snowden
Hermene D. Hartman	Betty J. Stephens
Richard Heckman	Patsy S. Stone
Ralph Hornblower III	Herman Sulsona
Ron Hull	Gerald M. Tabenken
Lela G. Jacobson	Suzanne Dabney Taylor
Linda J. Jadwin	Julio Torres
James F. Kelley	Benjamin M. Tucker
Henry L. Kimelman	Marta Moreno Vega
Elise Kuhl Kirk	Constance Wahl
Ira McKissick Koger	Marcia Webb
Donald S. Lauder	Marcia Simon Weisman
Daniel Lecht	Rosine McFaddin Wilson
Ruth McWilliams Leffall	Connie Wimer
Ron M. Linton	Martha Sinnard Wright
Robert F. Lusk	

*NATIONAL GALLERY OF ART BOARD OF TRUSTEES*

Paul Mellon,	Carlisle H. Humelsine	Franklin D. Murphy
<i>Chairman</i>	Ruth Carter Johnson	John R. Stevenson

Warren E. Burger, *Chief Justice of the United States, ex officio*

Edmund S. Muskie, *Secretary of State, ex officio*

G. William Miller, *Secretary of the Treasury, ex officio*

S. Dillon Ripley, *Secretary, Smithsonian Institution, ex officio*

APPENDIX 2. *Smithsonian Special Foreign Currency Program  
Awards Made October 1, 1979, through  
September 30, 1980*

ARCHEOLOGY AND RELATED DISCIPLINES  
(INCLUDING ANTHROPOLOGY)

**American Institute of Indian Studies**, Chicago, Illinois. Continued support for administration; research fellowships; Center for Art and Archeology; translations program; U.S. participation in the International Symposium on Urdu Short Stories; U.S. participation in the Second International Conference on South Asian Languages and Linguistics; and film documentation of the Krishnattam dance ritual of Kerala (India).

**American Research Center in Egypt**, Princeton, New Jersey. Operation of Center in Cairo; fellowship program in the study of archeology and related disciplines in Egypt; the Middle Commentaries on Aristotle's *Organon* by Averroes; continuation of the architectural and epigraphic survey of Egypt; excavation at Mendes; an archeological map of the Theban necropolis; predynastic research at Hierakonpolis, excavations at the medieval site of Fustat (Old Cairo); the Wadi Tumilat project; and preservation of the records of the Coptic Orthodox Church in Egypt.

**American Schools of Oriental Research**, Cambridge, Massachusetts. Excavation in salient areas of Punic and Roman Carthage (Tunisia); and publication of Roman Carthage materials (India).

**Bernard M. Baruch College**, New York, New York. The changing role of the district magistrate and/or Deputy Commissioner in India, 1930-1980.

**Brooklyn College**, New York, New York. A preliminary restudy of an Indian village.

**Brown University**, Providence, Rhode Island. Documentation program for traditional performance forms in India.

**Dumbarton Oaks Center for Byzantine Studies**, Washington, D.C. A corpus of the mosaics of Tunisia (Tunisia); and publication (India).

**Harvard University**, Cambridge, Massachusetts. Humayan's tomb (India).

**Herbert H. Lehman College**, Bronx, New York. Ethnoarcheology of ceramic production and distribution (India).

**Indo-U.S. Subcommission on Education and Culture**, New York, New York. Indo-U.S. Fellowship Program.

**Menninger Foundation**, Topeka, Kansas. The impact of culture through maternal behavior on infant development (India).

**Social Science Research Council**, New York, New York. U.S. participation in U.S.-Indian conference on models and metaphors in Indian folklore.



**Southern Methodist University**, Dallas, Texas. Prehistory of the Western Desert, Egypt (Egypt), and publication (India); and U.S. participation in Poznan conference on the origin and early development of food-producing cultures in Northeast Africa (Poland).

**University of California**, Berkeley, California. A study of paleo-climates and prehistoric land-use in the Son Valley, Madhya Pradesh (India); and study tour on carbon-14 and related archeological techniques (India).

**University of Illinois**, Urbana, Illinois. The Burmese palace language, non-standard Burmese dialects, and the descriptive and comparative linguistics of Burmese; Theravada Buddhism and its subsidiary cults (Burma); and a study of Indian parliamentary elections, 1980.

**University of Maryland**, College Park, Maryland. The story of medieval Egypt; al Maqrīzī's topographical history.

**University of Pennsylvania**, Philadelphia, Pennsylvania. An investigation of traditional shipbuilding in India; linguistic archeology of the South Asian sub-continent (India); travel of Indian participants in the symposium on approaches to social change in South India; and documentation of architectural monuments in Pakistan.

**University of Washington**, Seattle, Washington. Catalog of Islamic coins (Egypt) and travel of Indian participant in AAAS symposium on South Asia.

**University of Wisconsin**, Madison, Wisconsin. Contemporary South Asian civilization films (India).

**Wesleyan University**, Middletown, Connecticut. Ethnographic research in the highland area, northern Pakistan.

## SYSTEMATIC AND ENVIRONMENTAL BIOLOGY (INCLUDING PALEOBIOLOGY)

**Chesapeake Bay Center for Environmental Studies**, Edgewater, Maryland. U.S. participation in the International Wetlands Conference (India).

**Duke University**, Durham, North Carolina. Anthropological and paleontological research into the fossil anthropoid sites of the Egyptian Oligocene.

**Howard University**, Washington, D.C. Cenozoic mammals of Pakistan; and participation in field conference on Neogene/Quaternary boundary in India.

**Los Angeles County Natural History Museum**, Los Angeles, California. Studies on foliicolous fungi (Burma).

**Milwaukee Public Museum**, Milwaukee Wisconsin. Cenozoic vertebrate paleontology and stratigraphy of northwestern India.

**Missouri Botanical Garden**, St. Louis, Missouri. Biosystematics of the family Onagraceae (India).

**National Museum of Natural History**, Washington, D.C. Endangered plant species of the Sinai (Egypt); U.S. participation in the Third International Symposium of Fossil Corals (Poland); and continuation of research on the Araceae of southwestern India.

**National Zoological Park**, Washington, D.C. Cooperative zoo exchanges (India); and examination of red panda skeletal collections in Indian museums.

**Oregon State University**, Corvallis, Oregon. An anatomical and systematic study of domatia and their mites (India).

**Our Lady of the Lakes University**, San Antonio, Texas. Zoogeography of the Anostraca of India.

**Pomona College**, Pomona, California. The physiology of bamboo flowering and reproduction (India).

**Rutgers, The State University**, New Brunswick, New Jersey. Participation of Indian scientists in the Third Workshop of the International Union of Forestry Research.

**Smithsonian Tropical Research Institute**, Balboa, Panama. U.S. participation in the Mahabaleshwar workshop on the evolution of social behavior (India); and webs and web-building behavior of Indian orb-weaving spiders; and social biology of Indian wasps.

**Southern Illinois University**, Carbondale, Illinois. The occlusal epidemiological transition in populations of North India.

**University of California**, Davis, California. A comparison of mother and non-mother bonnet macaques in captivity and in a natural habitat (India).

**University of Michigan**, Ann Arbor, Michigan. A survey of the fossorial amphibians and reptiles of the uplands of the Indian subcontinent; fossil mammals in Paleocene and Eocene continental sediments of Pakistan; and participation in field conference on Neogene/Quaternary boundary in India.

**University of North Carolina**, Charlotte, North Carolina. Participation in field conference on the Neogene/Quaternary boundary in India.

**Yale University**, New Haven, Connecticut. Later Miocene hominoids and origins of Hominidae (Pakistan).

## ASTROPHYSICS AND EARTH SCIENCES

**National Air and Space Museum**, Washington, D.C. Geomorphological studies of the Rajasthan Desert (India).

**Smithsonian Astrophysical Observatory**, Cambridge, Massachusetts. Continuation of operation of Uttar Pradesh State Observatory/Smithsonian Astrophysical Observing Station, Naini Tal, India. Continuation of operation of a satellite tracking laser system at the Helwan Observatory in Egypt; and Second International Colloquium of Reference Coordinate Systems for Earth Dynamics (Poland).

**University of Maryland**, College Park, Maryland. Radioastronomical observation of the total solar eclipse in India.

**University of Oregon**, Eugene, Oregon. Participation of U.S. scholars in the International Group Discussion/Symposium on Deccan Volcanism and Related Basalt Provinces.

**University of Texas**, Austin, Texas. On the problem of three bodies (India).

**University of Wisconsin**, Fox Valley, Menasha, Wisconsin. An investigation of the manuscripts of the Sawai Man Singh II Museum (India).

## MUSEUM PROGRAMS

**Carnegie Museum of Natural History**, Pittsburgh, Pennsylvania. Museum professional exchange program (India).

**Indo-U.S. Subcommittee on Education and Culture**, New York, New York. Project support for Indo-U.S. joint programs; and film preparation, "Manifestations of Siva" (India).

**International Museum of Photography at George Eastman House**, Rochester, New York. Post-independence photography in India.

**Smithsonian Institution**, Washington, D.C. Participation in workshop on the establishment of science museums in Asian countries—Training and Exchange (India).

**Woodrow Wilson International Center for Scholars**, Washington, D.C. Fellowship travel support (Poland).



APPENDIX 3. *National Museum Act Grants Awarded  
in Fiscal Year 1980*

SEMINAR/WORKSHOP PROGRAM

**American Association for State and Local History**, Nashville, Tennessee  
**Association of Science-Technology Centers**, Washington, D.C.  
**Children's Museum of Boston**, Boston, Massachusetts  
**Mountain Heritage Center**, Western Carolina University, Cullowhee,  
North Carolina  
**Museum of Early Southern Decorative Arts**, Winston-Salem, North Carolina  
**National Trust for Historic Preservation**, Washington, D.C.  
**New Mexico Association of Museums**, Santa Fe, New Mexico  
**Texas Historical Commission**, Austin, Texas

STIPENDS TO INDIVIDUALS FOR CONSERVATION STUDIES

**Diane E. Cabelli**, Conservation Center Institute of Fine Arts, New York Uni-  
versity, New York, New York  
**Virginia Caswell**, Queen's University, Kingston, Ontario, Canada  
**Randall Copeland**, US/ICOMOS, Washington, D.C.  
**Elisabeth Cornu**, The Fine Arts Museums of San Francisco, San Francisco,  
California  
**Paula M. DeCristofaro**, Courtauld Institute of Art, London, England  
**Janet Garbarino**, Victoria and Albert Museum, London, England  
**Karen Garlick**, Folger Shakespeare Library, Washington, D.C.  
**John Mark Garrison**, US/ICOMOS, Washington, D.C.  
**Joseph Patrick Hough**, US/ICOMOS, Washington, D.C.  
**Paul R. Jett**, Queen's University, Kingston, Canada  
**Holly Maxson**, Historical Society of Pennsylvania, Philadelphia, Pennsylvania  
**Kerry McInnis**, Library of Congress, Washington, D.C.  
**Lisa Minette Morriss**, Queen's University, Kingston, Ontario, Canada  
**Elizabeth Peacock**, Queen's University, Kingston, Ontario, Canada  
**Toby Raphael**, US/ICOMOS, Washington, D.C.  
**Noelle Soren**, Missouri Heritage Trust, Inc., Jefferson City, Missouri  
**Philip Sykas**, The Textile Conservation Centre Limited, Surrey, England  
**Eugene York**, Mystic Seaport Museum, Inc., Mystic, Connecticut

STIPEND SUPPORT FOR GRADUATE/PROFESSIONAL  
EDUCATION AND TRAINING

- Bank Street College of Education, New York, New York
- Conservation Center, New York University, New York, New York
- Cooperstown Graduate Programs, Oneonta, New York
- The University of California, Los Angeles, California
- The University of Delaware, Newark, Delaware
- The University of Michigan, Ann Arbor, Michigan
- The University of Minnesota, Minneapolis, Minnesota

STIPEND SUPPORT FOR MUSEUM INTERNSHIPS

- Association of Science-Technology Centers, Washington, D.C.
- Fogg Art Museum, Cambridge, Massachusetts
- Minneapolis Institute of Arts, Minneapolis, Minnesota
- Museum of Fine Arts, Boston, Massachusetts
- Missouri Botanical Garden, St. Louis, Missouri
- New York Botanical Garden, Bronx, New York
- New York Zoological Society, Bronx, New York
- Regional Conference of Historical Agencies, Manlius, New York
- The Museums at Stony Brook, Stony Brook, New York
- The University Museum, Philadelphia, Pennsylvania
- Yale University Art Gallery, New Haven, Connecticut

TRAVEL FOR MUSEUM PROFESSIONALS

- Carol Aiken, Corning Museum of Glass, Corning, New York
- William C. Griggs, Panhandle-Plains Historical Museum, Canyon, Texas
- Catherine Kvaraceus, Museum of Fine Arts, Boston, Massachusetts
- Mark Rosenthal, Lincoln Park Zoological Gardens, Chicago, Illinois

SPECIAL STUDIES AND RESEARCH

- Association of Systematic Collections, Lawrence, Kansas
- Mellon Institute, Pittsburgh, Pennsylvania
- Rensselaer Polytechnic Institute, Troy, New York
- Rochester Institute of Technology, Rochester, New York
- Society for the Preservation of New England Antiquities, Boston, Massachusetts

PROFESSIONAL ASSISTANCE

- African American Museums Association, Boston, Massachusetts
- American Association of Museums, Washington, D.C.
- American Association for State and Local History, Nashville, Tennessee
- National Conservation Advisory Council, Washington, D.C.

#### APPENDIX 4. *Publications of the Smithsonian Institution Press in Fiscal Year 1980*

### GENERAL PUBLICATIONS

#### TRADE PUBLICATIONS

Mary Anglemeyer, Eleanore R. Seagraves, and Catherine C. LeMaistre. *A Search for Environmental Ethics: An Initial Bibliography*. Sponsored by the Rachel Carson Council, Inc. 119 pages, September 16, 1980. \$8.95.

Esin Atil, editor. *Turkish Art*. 386 pages, 65 color and 221 black-and-white illustrations. September 26, 1980. \$65.00.

Don H. Berkebile. *Carriage Terminology: An Historical Dictionary*. 488 pages, 1 color and 539 black-and-white illustrations. December 15, 1979. \$35.00.

Purnima Mehta Bhatt. *Scholars' Guide to Washington, D.C., for African Studies*. xiv + 348 pages. March 24, 1980. Cloth: \$25.00; paper: \$8.95.

Walter J. Boyne and Donald S. Lopez, editors. *The Jet Age: Forty Years of Jet Aviation*. 190 pages, 213 black-and-white illustrations. October 24, 1979. Cloth: \$17.50; paper: \$7.95.

Adelyn Dohme Breeskin. *Mary Cassatt: A Catalogue Raisonné of the Graphic Work*. 189 pages, 12 color and 264 black-and-white illustrations. February 14, 1980. \$40.00.

Roland Wilbur Brown. *Composition of Scientific Words*. 882 pages. October 19, 1979. \$15.00.

Herbert Ridgeway Collins. *Threads of History: Americana Recorded on Cloth: 1775 to the Present*. iv + 566 pages, 25 color and 1,568 black-and-white illustrations. November 20, 1979. \$60.00.

Paul E. Desautels. *The Gem Collection*. 77 pages, 45 color and 39 black-and-white illustrations. December 28, 1979. Cloth: \$12.50; paper: \$6.95.

Kenneth J. Dillon. *Scholars' Guide to Washington, D.C. for Central and East European Studies*. 350 pages. April 24, 1980. Cloth: \$25.00; paper, \$8.95.

John F. Eisenberg, editor. *Vertebrate Ecology in the Northern Neotropics*. 271 pages, 77 black-and-white illustrations. November 28, 1979. Cloth: \$17.50; paper: \$8.95.

John C. Ewers. *The Horse in Blackfoot Culture*. Reprint of the *Bureau of American Ethnology Bulletin* 159. 374 pages, 50 black-and-white illustrations. May 19, 1980. Paper: \$9.95.

Federal Council on the Arts and Humanities. Linda C. Coe, Rebecca Denney, Anne Rogers, editors. *Cultural Directory II: Federal Funds and Services for the Arts and Humanities*. 256 pages. December 26, 1979. Paper: \$7.75.

Allan A. Hodges and Carol A. Hodges, editors. *Washington on Foot*. Second edition. 202 pages, 124 black-and-white illustrations. July 1, 1980. Paper: \$4.25.



Bernard Karpel, editor. *Arts in America: A Bibliography*. Four-volume set. 2,800 pages. December 31, 1979 (volumes 1 and 4); September 8, 1980 (volumes 2 and 3). \$190.00.

J. Allen Keast and Eugene S. Morton, editors. *Migrant Birds in the Neotropics: Ecology, Behavior, Distribution, and Conservation*. 576 pages, 189 black-and-white illustrations. August 25, 1980. Cloth: \$27.50; paper: \$15.00.

Hong N. Kim. *Scholars' Guide to Washington, D.C. for East Asian Studies*. xiv + 414 pages. October 11, 1979. Cloth: \$19.95; paper: \$8.95.

Cynthia Jaffee McCabe. *Fernando Botero*. 119 pages, 16 color and 90 black-and-white illustrations. December 12, 1979. \$20.00.

Charles W. Millard. *Miró: Selected Paintings*. 94 pages, 45 color and 16 black-and-white illustrations. March 11, 1980. \$20.00.

Robert C. Mikesch. *Albatros D.Va: German World War I Fighter*. viii + 116 pages, 10 color and 210 black-and-white illustrations. August 29, 1980. Paper: \$7.95.

Richard J. Montali and George Migaki, editors. *The Comparative Pathology of Zoo Animals*. 684 pages, 2 color and 375 black-and-white illustrations. September 30, 1980. Cloth: \$45.00; paper: \$25.00.

Robert W. Nero. Photographs by Robert R. Taylor. *The Great Gray Owl: Phantom of the Northern Forests*. 168 pages, 30 color and 58 black-and-white illustrations. September 30, 1980. \$17.50.

Renwick Gallery of the National Collection of Fine Arts. *Georg Jensen Silver-smithy: 77 Artists, 75 Years*. 128 pages, 161 black-and-white illustrations. March 17, 1980. Cloth: \$20.00; paper: \$9.95.

Bonnie Rowen. *Scholars' Guide to Washington, D.C., for Film and Video Collections*. xxii + 283 pages. July 7, 1980. Cloth: \$25.00; paper: \$8.95.

William H. Truettner. *The Natural Man Observed: A Study of Catlin's Indian Gallery*. 325 pages, 29 color and 580 black-and-white illustrations. October 10, 1979. \$40.00.

E. T. Wooldridge, Jr. *The P-80 Shooting Star: Evolution of a Jet Fighter*. 111 pages, 10 color and 158 black-and-white illustrations. November 1, 1979. Paper: \$5.95.

#### TRADE REPRINTS

Bill Blackbeard and Martin Williams. *The Smithsonian Collection of Newspaper Comics*. Third printing. 336 pages, 96 color and 667 black-and-white illustrations. August 5, 1980. Cloth: \$29.95; paper: \$14.95.

Grace Rogers Cooper. *The Sewing Machine: Its Invention and Development*. Second edition, second printing. 238 pages, 216 black-and-white illustrations. December 21, 1979. \$20.00.

#### TRADE SALE DISTRIBUTION

K. Oakley, B. Campbell, and T. Molleson, editors. *Catalogue of Fossil Hominids. Part I: Africa; Part II: Europe; Part III: Americas, Asia, Australia*. Part I: 223 pages, 20 plates, 2 maps, 4 figures. Paper: \$27.50. Part II: 379 pages, 2 plates, 15 maps. Paper: \$42.50. Part III: 226 pages, 5 plates, 9 maps, 5 figures. Paper: \$30.00. January 1980. The Set: \$87.50.

Robert Dale Owen. *Hints on Public Architecture*. 119 pages, 7 plates, 6 illustrations. Limited edition, facsimile bound. \$49.50.

## ANNUAL REPORTS

American Historical Association. *Annual Report, 1978*. viii + 207 pages. November 12, 1979.

American Historical Association. *Annual Report, 1979*. viii + 194 pages, September 30, 1980.

Chesapeake Bay Center for Environmental Studies. *Annual Report, 1979*. 11 pages. August 18, 1980.

Office of American and Folklife Studies. *Report of the Office of Folklife Program, 1979*. 8 pages. August 19, 1980.

Office of Membership and Development. *Benefactors of the Smithsonian Institution, 1979*. 47 pages. September 30, 1980.

Smithsonian Institution Tropical Research Institute. *Annual Report, 1978*. 24 pages, 4 black-and-white illustrations. February 15, 1980.

*Smithsonian Year, 1979*. viii + 592 pages, 68 black-and-white illustrations. May 1, 1980.

*Smithsonian Year, 1979. Statement by the Secretary*. vi + 63 pages. 17 black-and-white illustrations. April 28, 1980.

## EXHIBITION CATALOGUES

### *Hirshhorn Museum and Sculpture Garden*

Cynthia Jaffee McCabe. *Fernando Botero*. 119 pages, 16 color and 90 black-and-white illustrations. December 12, 1979.

Charles Millard. *Miró: Selected Paintings*. 94 pages, 45 color and 16 black-and-white illustrations. March 12, 1980.

Phyllis Rosenzweig. *The Fifties: Aspects of Painting in New York*. 111 pages, 12 color and 60 black-and-white illustrations. May 16, 1980.

Joe Shannon. *Edwin Dickinson: Selected Landscapes*. 72 pages, 4 color and 62 black-and-white illustrations. September 11, 1980.

Judith Zilczer. *Oscar Bluemner: The Hirshhorn Museum and Sculpture Garden Collection*. 64 pages, 4 color and 64 black-and-white illustrations. November 16, 1979.

### *National Collection of Fine Arts*

Adelyn Dohme Breeskin. *Mary Cassatt: A Catalogue Raisonné of the Graphic Work*. 189 pages, 12 color and 264 black-and-white illustrations. December 1979.

Diane Upright Headley. *The Drawings of Morris Lewis*. 141 pages, 1 color and 657 black-and-white illustrations. December 4, 1979.

Virginia M. Mecklenburg. *Across the Nation: Fine Arts for Federal Buildings*. 35 pages, 95 black-and-white illustrations. June 23, 1980.

———. *John R. Grabach: Seventy Years an Artist*. 47 pages, 6 color and 17 black-and-white illustrations. May 20, 1980.

Patterson Simms, Merry A. Foresta, Dorothy Dehner, and Janet A. Flint. *Jan Matulka, 1890–1972*. 104 pages, 3 color and 81 black-and-white illustrations. January 30, 1980.

Roberta K. Tarbell. *Hugo Robus (1885–1964)*. 240 pages, 3 color and 312 black-and-white illustrations. June 4, 1980.

### National Museum of History and Technology

An Engraver's Pot-Pourri: Life and Times of a Nineteenth-Century Bank-Note Engraver. 14 pages, 6 black-and-white illustrations. November 5, 1979.

### National Portrait Gallery

Marvin Sadik and Harold Francis Pfister. *American Portrait Drawings*. 216 pages, 96 black-and-white illustrations. April 21, 1980.

Robert G. Stewart. *Robert Edge Pine, A British Portrait Painter in America, 1784-1788*. 127 pages, 71 black-and-white illustrations. October 18, 1979.

### Smithsonian Institution Traveling Exhibition Service

Winfried Baer. *Berlin Porcelain*. 96 pages, 16 color and 45 black-and-white illustrations. September 12, 1980.

Tamara Preaud. *Sèvres Porcelain*. 96 pages, 14 color and 38 black-and-white illustrations. March 5, 1980.

### EXHIBITION CHECKLISTS

Freer Gallery of Art. *Art of the Court of Shah Tahmasp*. 4 pages, 6 black-and-white illustrations. December 6, 1979.

Hirshhorn Museum and Sculpture Garden [Cynthia Jaffee McCabe] *Hans Richter's Stalingrad (Victory in the East)*. 6 pages, 4 black-and-white illustrations. February 1, 1980.

National Collection of Fine Arts. *Birds: Works from the 1979 Annual Exhibition of Art Depicting Birds*. 4 pages, 6 black-and-white illustrations. January 22, 1980.

———. *Hugo Robus (1885-1964)*. 12 pages, 3 black-and-white illustrations. November 26, 1980.

———. *Man and Beast: The Washington Print Club Eighth Biennial Members' Exhibition*. 8 pages, 10 black-and-white illustrations. September 4, 1980.

———. *Max Weber: Prints and Color Variations*. 16 pages, 6 black-and-white illustrations. June 23, 1980.

———. *Prints for the People: Selections from New Deal Graphics Projects*. 6 pages, 1 black-and-white illustration. October 18, 1979.

———. *Romaine Brooks (1874-1970)*. Prepared for the Ramapo Consortium of Colleges and Universities. 4 pages, 3 black-and-white illustrations. September 5, 1980.

———. *William H. Johnson (1901-1970)*. Prepared for the Ramapo Consortium of Colleges and Universities. 4 pages, 2 black-and-white illustrations. September 5, 1980.

National Portrait Gallery. *The Great Crash*. 16 pages, 13 black-and-white illustrations. October 1, 1979.

Renwick Gallery of the National Collection of Fine Arts. *Traditional Marionettes in French Belgium Today*. 4 pages, 5 black-and-white illustrations. April 17, 1980.

### BOOKS

#### National Museum of Natural History

Karl V. Krombein, Paul D. Hurd, Jr., David R. Smith, and B. D. Burks. *Catalog of Hymenoptera in America North of Mexico*. Three volumes. Volume 1: *Symphyta and Apocrita (Parasitica)*. xvi + 1,198 pages. Volume 2: *Apocrita (Aculeata)*. xvi + pp. 1,199-2,210. Volume 3: *Indexes*. xxx + pp. 2,211-2,735.



*Research Institute on Immigration and Ethnic Studies*

Roy Simón Bryce-Laporte. *Sourcebook on the New Immigration: Book II (Supplement)*. xxi + 302 pages.

Lucy M. Cohen. *Culture, Disease, and Stress among Latino Immigrants*. xxvii + 315 pages. July 10, 1980.

Stephen R. Couch and Roy Simón Bryce-Laporte, editors. *Quantitative Data and Immigration Research*. xxxiv + 297 pages. July 10, 1980.

*Smithsonian Institution Traveling Exhibition Service*

Douglas Mazonowicz. *On the Rocks: The Story of Prehistoric Pictures*. 32 pages, 33 black-and-white illustrations. February 4, 1980.

BOOKLETS

National Museum of History and Technology. *The First Ladies Hall*. Revised reprint. 12 pages, 9 color and 48 black-and-white illustrations. August 1, 1980.

Office of the Assistant Secretary for Administration. *Smithsonian Institution Quadrangle Development*. 24 pages, 30 black-and-white illustrations. September 19, 1980.

Office of Elementary and Secondary Education. *Let's Go to the Smithsonian: Learning Opportunities for Schools, 1980-1981*. 36 pages, 39 black-and-white illustrations. August 1, 1980.

Office of Membership and Development. Dinner program for the Fourth Annual Dinner in Honor of the National Board of the Smithsonian Associates and the James Smithson Society. 20 pages. September 19, 1980.

———. Invitation to join the James Smithson Society of the Smithsonian Associates. 6 pages. March 1, 1980.

———. *Planning Your Smithsonian Visit—Smithsonian National Associates*. 16 pages, 3 black-and-white illustrations. August 20, 1980.

———. *Planning Your Smithsonian Visit*. 12 pages. August 20, 1980.

Office of Museum Programs. *National Museum Act Guidelines for 1981 Grant Programs*. 32 pages. July 10, 1980.

Office of Personnel Administration. *Employment at the Smithsonian: Questions and Answers*. January 7, 1980.

Office of the Secretary. *Bylaws of the Board of Regents and Charter Provisions of the Smithsonian Institution*. 44 pages. January 2, 1980.

Office of Symposia and Seminars. *The Muses Flee Hitler*. (Colloquium Program). January 31, 1980.

Smithsonian Institution Traveling Exhibition Service. *Image of the Black in Western Art*. 10 pages, 16 black-and-white illustrations. September 26, 1980.

FOLDERS

Freer Gallery of Art. *Ancient Chinese Jade*. August 25, 1980.

———. *Chinese Calligraphy*. May 1, 1980.

———. *The Freer Gallery of Art*. August 13, 1980.

National Air and Space Museum. *The National Air and Space Museum*. February 6, 1980.

National Museum of History and Technology. *Buckaroos in Paradise: Cowboy Life in Northern Nevada*. September 30, 1980.

National Portrait Gallery. *Portraits I*. Reprint. November 28, 1979.

———. *Portraits II*. Reprint. November 28, 1979.

Office of Elementary and Secondary Education. *Art To Zoo*. Newsletter, published several times per year.

*Let's Go To the Smithsonian!* Bulletin for schools, published several times per year.

Office of Fellowships and Grants. *Smithsonian Fellowships*. September 10, 1980.

Office of Horticulture. *A Victorian Horticultural Extravaganza*. July 21, 1980.

Office of Museum Programs. *Children in Museums Symposium*. October 26, 1979.

Office of Public Affairs. *Smithsonian Institution*. Reprint. October 1, 1979.

Office of Symposia and Seminars. *The Muses Flee Hitler*. (Concert program). January 31, 1980.

Renwick Gallery of the National Collection of Fine Arts. *Paintings and Sculpture of the Grand Salon and Octagon Room*. December 10, 1979.

———. *Renwick Gallery of the National Collection of Fine Arts*. Revised reprint. October 26, 1979.

#### FLYERS

Freer Gallery of Art. *Chinese Bronzes*. March 3, 1980.

———. *Islamic Calligraphy and Illumination*. April 2, 1980.

———. *Japanese Screens*. September 30, 1980.

Museum of African Art. *Introductory Courses in African Art and Culture*. January 17, 1980.

Office of Horticulture. *Trees of Christmas*. December 13, 1979.

#### INVITATIONS

National Air and Space Museum. *Early Flight*. February 27, 1980.

National Collection of Fine Arts. *Across the Nation: Fine Arts for Federal Buildings*. May 14, 1980.

———. *The American Renaissance, 1876–1917*. January 21, 1980.

———. *The Barney House Circle*. February 20, 1980.

———. *Birds: Works from the 1979 Annual Exhibition of Art Depicting Birds*. December 10, 1979.

———. *David Gilmour Blythe*. September 29, 1980.

———. *The Drawings of Morris Lewis*. November 1, 1979.

———. *Harry Bertoia Sculpture Presentation*. July 1, 1980.

———. *Hugo Robus*. October 24, 1979.

———. *Max Weber: Prints and Color Variations*. May 22, 1980.

———. *Members of the Virginia Art Education Association*. October 12, 1979.

———. *Reception Honoring Jacob Kainen*. November 14, 1979.

Office of Fellowships and Grants. *The Pursuit of Knowledge, Regents' Fellows' Colloquium*. April 8, 1980.

Office of Horticulture. *A Victorian Horticultural Extravaganza*. June 1980.

Office of Membership and Development. A Decade of Discovery. October 18, 1979.

———. The Portrait Ball. February 7, 1980.

———. Selections from the National Gem Collection. February 25, 1980.

———. Shikanai Film Previews. February 29, 1980.

———. A Tour of the Dibner Library. May 10, 1980.

Renwick Gallery of the National Collection of Fine Arts. Berlin Porcelain. August 18, 1980.

———. A Century of Ceramics in the United States, 1878–1978. October 11, 1979.

———. Costumes from the Arab World. April 8, 1980.

———. Georg Jensen Silversmithy: 77 Artists, 75 Years. December 10, 1979.

———. New Glass. February 21, 1980.

———. Ryijy Rugs from Finland: 200 Years of a Textile Art. November 26, 1979.

———. Traditional Marionettes in French Belgium Today. March 26, 1980.

———. Webfoots and Bunchgrassers: Folk Art of Oregon Country. August 18, 1980.

Smithsonian Institution Press. Franz Bader autograph reception for Adelyn Dohme Breeskin: Mary Cassatt Author's Party. January 15, 1980.

#### POSTER

Smithsonian Institution Traveling Exhibition Service. *Farallon Islands: A Conservation Story*. December 14, 1979.

#### MISCELLANEOUS

National Air and Space Museum. Study prints for pre-post learning materials. Text labels for photo reproductions. 1980.

National Museum of Natural History. *Atoll Research Bulletin* Nos. 223–232 (in one volume), October 1979; Nos. 233–239 (in one volume), November 1979; No. 240, January 1980; and No. 241, March 1980. Production and distribution. For individual authors and titles, see Appendix 6, Publications of the Staff.

Smithsonian Institution Archives. Management of Archives and Manuscript Collections for Libraries. Front matter for book reprint. 1980.

Smithsonian Institution Libraries. "Smithsonian Institution Libraries, Gift of Marcia Brady Tucker." Book plates. June 13, 1980.

Smithsonian Institution Press. *Merchants of Light*. (Cover for the reprint of an article.) November 15, 1979.

### SERIES PUBLICATIONS

#### SMITHSONIAN CONTRIBUTIONS TO ANTHROPOLOGY

25. Robert M. Laughlin. "Of Shoes and Ships and Sealing Wax: Sundries from Zinacantán." v + 286 pages, frontispiece, 4 figures. May 15, 1980.

26. Don D. Fowler and John F. Matley. "Material Culture of the Numa: The John Wesley Powell Collection, 1867–1880." vi + 181 pages, 82 figures, 1 map, 2 tables. January 18, 1980.

#### SMITHSONIAN CONTRIBUTIONS TO BOTANY

41. Joseph H. Kirkbride, Jr. "Revision of the Genus *Psyllocarpus* (Rubiaceae)." iii + 32 pages, 41 figures, 8 plates. October 17, 1979.



43. Beryl B. Simpson. "A Revision of the Genus *Polylepis* (Rosaceae: Sanguisorbeae)." iii + 62 pages, 39 figures. November 27, 1979.
44. Cleofé E. Calderón and Thomas R. Soderstrom. "The Genera of Bambusoideae (Poaceae) of the American Continent: Keys and Comments." iv + 27 pages. February 13, 1980.
45. F. Raymond Fosberg and Marie-Hélène Sacht. "Systematic Studies of Micronesian Plants." iii + 40 pages, 2 figures. June 13, 1980.

#### SMITHSONIAN CONTRIBUTIONS TO THE EARTH SCIENCES

23. Ursula B. Marvin and Brian Mason, editors. "Catalog of Antarctic Meteorites, 1977-1978." iii + 50 pages, 39 figures, 2 tables. July 25, 1980.

#### SMITHSONIAN CONTRIBUTIONS TO THE MARINE SCIENCES

3. Gilbert Kelling, Andrés Maldonado, and Daniel Jean Stanley. "Salt Tectonics and Basement Fractures: Key Controls of Recent Sediment Distribution on the Balearic Rise, Western Mediterranean." iii + 52 pages, 19 figures, 9 tables. October 19, 1979.
4. Daniel Jean Stanley. "Submarine Canyon Wall Sedimentation and Lateral Infill: Some Ancient Examples." iii + 32 pages, 17 figures. February 13, 1980.
5. Daniel Jean Stanley. "The Saint-Antonin Conglomerate in the Maritime Alps: A Model for Coarse Sedimentation on a Submarine Slope." iii + 25 pages, 12 figures, 1 table. July 23, 1980.
6. Stephen J. Culver and Martin A. Buzas. "Distribution of Recent Benthic Foraminifera off the North American Atlantic Coast." iii + 512 pages, 150 figures, 2 tables. July 11, 1980.

#### SMITHSONIAN CONTRIBUTIONS TO ZOOLOGY

289. Harald A. Rehder. "The Marine Mollusks of Easter Island (Isla de Pascua) and Sala y Gómez." iv + 167 pages, 15 figures, 14 plates, 1 table. August 5, 1980.
291. Edwin O. Willis and Eugene Eisenmann. "A Revised List of Birds of Barro Colorado Island, Panama." iii + 31 pages, 1 figure. November 27, 1979.
292. Paul Slud. "The Birds of Hacienda Palo Verde, Guanacaste, Costa Rica." iv + 92 pages, frontispiece, 6 figures, 33 plates, 1 table. June 3, 1980.
296. Roger Cressey and Hillary Boyle Cressey. "The Parasitic Copepods of Indo-West Pacific Lizardfishes (Synodontidae)." iii + 71 pages, 53 figures, 2 tables. December 14, 1979.
297. Victor E. Diersing and Don E. Wilson. "Distribution and Systematics of the Rabbits (*Sylvilagus*) of West-Central Mexico." iii + 34 pages, 12 figures, 3 tables. January 8, 1980.
301. W. Ronald Heyer. "Systematics of the *pentadactylus* Species Group of the Frog Genus *Leptodactylus* (Amphibia: Leptodactylidae)." iii + 43 pages, 23 figures, 12 tables. October 9, 1979.
302. Carl Zimmer. "Cumaceans of the American Atlantic Boreal Coast Region (Crustacea: Peracarida)." Edited by Thomas E. Bowman and Les Watling. v + 29 pages, 78 figures. March 5, 1980.
303. Wayne N. Mathis. "Studies of Ephydrinae (Diptera: Ephydriidae), III: Revisions of Some Neotropical Genera and Species." iii + 50 pages, 77 figures. May 14, 1980.

304. Brian Kensley. "Anthuridean Isopod Crustaceans from the International Indian Ocean Expedition, 1960-1965, in the Smithsonian Collections." iii + 37 pages, 25 figures. January 29, 1980.
305. Ch. Lewinsohn and Raymond B. Manning. "Stomatopod Crustacea from the Eastern Mediterranean." iii + 22 pages, 7 figures. March 27, 1980.
307. Anita George and Victor G. Springer. "Revision of the Clinid Fish Tribe Ophiclinini, Including Five New Species, and Definition of the Family Clinidae." iii + 31 pages, 14 figures, 6 tables. June 13, 1980.
308. John R. Holsinger and Glenn Longley. "The Subterranean Amphipod Crustacean Fauna of an Artesian Well in Texas." iii + 62 pages, 27 figures, 3 tables. June 13, 1980.
309. Louis S. Kornicker and Francisca Elena Caraion. "*Nealella*, a New Genus of Myodocopid Ostracoda (Sarsiellidae: Dantyninae)." iii + 27 pages, 16 figures, 7 plates. June 13, 1980.
311. Roger Cressey and Hillary Boyle Cressey. "Parasitic Copepods of Mackeral- and Tuna-like Fishes (Scombridae) of the World." iv + 186 pages, 139 figures. April 1, 1980.
312. Frank D. Ferrari and Thomas E. Bowman. "Pelagic Copepods of the Family Oithonidae (Cyclopoida) from the East Coasts of Central and South America." iii + 27 pages, 15 figures, 1 table. June 26, 1980.
313. Thomas R. Waller. "Scanning Electron Microscopy of Shell and Mantle in the Order Arcoida (Mollusca: Bivalvia)." iii + 58 pages, 46 figures, 1 table. June 23, 1980.
316. Storrs L. Olson and Alan Feduccia. "Relationships and Evolution of Flamingos (Aves: Phoenicopteridae)." iii + 73 pages, 40 figures, 2 tables. September 19, 1980.
317. Robert D. Gordon and Oscar L. Cartwright. "The Western Hemisphere Species of *Rhyssenus* and *Trichiorhyssenus* (Coleoptera: Scarabaeidae)." iii + 29 pages, 31 figures, 8 maps. September 9, 1980.
320. Martha R. Cooper and Horton H. Hobbs, Jr. "New and Little-known Crayfishes of the *virilis* Section of the Genus *Orconectes* (Decapoda: Cambaridae) from the Southeastern United States." iii + 44 pages, 13 figures, 6 tables. August 26, 1980.
321. Richard S. Houbrock. "Review of the Deep-Sea Genus *Argyropeza* (Gastropoda: Prosobranchia: Cerithiidae)." iii + 30 pages, 12 figures, 8 tables. July 23, 1980.
323. Storrs L. Olson and Alan Feduccia. "*Presbyornis* and the Origin of the Anseriformes (Aves: Charadriomorphae)." iv + 24 pages, frontispiece, 15 figures. September 19, 1980.

#### SMITHSONIAN STUDIES IN AIR AND SPACE

3. Paul A. Hanle. "High Technology on Earth: Studies in Using Aerospace Systems and Methods." iii + 59 pages, 1 figure. November 21, 1979.

#### SMITHSONIAN STUDIES IN HISTORY AND TECHNOLOGY

39. Richard E. Ahlborn, editor. "Man Made Mobile: Early Saddles of Western North America." x + 147 pages, frontispiece, 84 figures. September 9, 1980.

41. Audrey Davis and Toby Appel. "Bloodletting Instruments in the National Museum of History and Technology." v + 103 pages, 124 figures. December 14, 1979.
42. Claudia B. Kidwell. "Cutting a Fashionable Fit: Dressmakers' Drafting Systems in the United States. viii + 163 pages, frontispiece, 70 figures, 4 tables. January 24, 1979.
43. Susan H. Myers. "Handcraft to Industry: Philadelphia Ceramics in the First Half of the Nineteenth Century. iii + 117 pages, 32 figures. July 11, 1980.



## APPENDIX 5. *Publications of the Staff of the Smithsonian Institution and Its Subsidiaries in Fiscal Year 1980*

Publications are by staff members unless otherwise indicated.

### SCIENCE

#### CHESAPEAKE BAY CENTER FOR ENVIRONMENTAL STUDIES

- Balling, J. D. "Methods and Models of Decision Making for Conflict Resolution." In *Environmental Law: A Course of Study* vol. 2, sec. 3, pp. 49–59. Philadelphia: American Law Institute, 1980.
- Chrost, R. J., and Faust, M. A. "Molecular Weight Fractionation of Phytoplankton Extracellular Products by Ultra Filtration." *Acta Microbiologica Polonica*, 1980.
- Falk, J. H., and Balling, J. D. "The School Field Trip: Where You Go Makes The Difference." *Science and Children* 17(6)(1980):6–8.
- Falk, J. H., and Sullivan, J. K. "Perspectives On Education in Estuarine Sanctuaries." Chesapeake Bay Center for Environmental Studies, Smithsonian Institution, 1980.
- Faust, M. A., and Chrost, R. J. "Carbon and Phosphorus Assimilation of Estuarine Plankton Populations." In *International Symposium on the Effects of Nutrient Enrichment in Estuaries*, ed. B. Neilson. Clifton, N.J.: The Humana Press, Inc., 1980.
- Hines, A. H. "Size at Maturity and Reproduction in Five Species of Spider Crabs." *American Zoologist* 19(1979):378.
- Limpert, R. J. "Homing Success of Adult Buffleheads to a Maryland Wintering Site." *Journal of Wildlife Management*, vol. 4 (1980).
- Lynch, J. F.; Balinsky, E. C.; and Vail, S. G. "Foraging Patterns in Three Sympatric Forest Ant Species, *Prenolepis imparis*, *Paratrechina melanderi*, and *Aphaemogaster rudis* (Hymenoptera: Formicidae)." *Ecological Entomology* 5(4)(1980).
- Pogell, S. M. "Public Participation: Some Opportunities and Mechanisms for Non-Adversary Resolution of Environmental Conflict." In *Management and Control of Growth*, vol. 5, pp. 259–366. Washington, D.C.: The Urban Land Institute, 1980.
- Whigham, D. F., and Bayley, S. E. "Nutrient Dynamics in Freshwater Wetlands." In *Wetland Functions and Values: The State of Our Understanding*, eds. P. E. Greeson, J. R. Clark, and J. E. Clark, pp. 468–78. Minneapolis: American Water Works Association, 1979.
- Whigham, D. F., and McWethy, M. F. "Studies on the Pollination Ecology of *Tipularia discolor* (Orchidaceae)." *American Journal of Botany* 67(1980): 550–55.
- Whigham, D. F.; Simpson, R. L.; and Leck, M. A. "The Distribution of Seeds, Seedlings, and Established Plants of *Peltandra virginica* in a Freshwater Tidal Wetland." *Bulletin of the Torrey Botanical Club* 106(1980):193–99.
- Whigham, D. F.; Simpson, R. L.; and Lee, K. "The Effect of Sewage Effluent on

- the Structure and Function of a Freshwater Tidal Marsh Ecosystem." *Water Resources Research Institute*. New Brunswick, N.J.: Rutgers University, 1980.
- Wu, T. L. "Dissipation of the Herbicides Atrazine and Alachlor in a Maryland Cornfield." *Journal of Environmental Quality* 9(1980):459-65.
- Wu, T. L.; Lampert, L.; Hastings, D.; and Banning, D. "Enrichment of the Agricultural Herbicide Atrazine in Micro-Surface Waters of an Estuary." *Bulletin of Environmental Contamination and Toxicology* 24(1980):411-14.

#### FORT PIERCE BUREAU

- Burke, R. D., and Chia, F. S. "Formation of the Larval Digestive Tract of *Strongylocentrotus purpuratus* I: Sphincter Formation." *International Journal of Invertebrate Reproduction*, 2(1980):1-12.
- . "Formation of the Larval Digestive Tract of *Strongylocentrotus purpuratus* II: Shaping and Bending." *International Journal of Invertebrate Reproduction*, 2(1980):13-21.
- Rice, Mary E. "Sipuncula and Echiura." In *Intertidal Invertebrates of the California Coast*, chapter 19. Stanford, Calif.: Stanford University Press, 1980.

#### NATIONAL AIR AND SPACE MUSEUM

##### Office of the Director

- Boyne, Walter J. *Flying: An Introduction to Flight, Airplanes and Aviation Careers*. Englewood Cliffs, N.J.: Prentice-Hall, 1980.
- . "Rara Aves." *Airpower* (January 1980).
- . "Return of the Swallow." *Wings* (April 1980).
- . "Wonder Weapons." *Wings* (June 1980).
- . "Russian Refugees." *Wings* (June 1980).
- . "A Walking Tour of the National Air and Space Museum." *World Progress Through Aviation*, United Nations Association of the United States of America, 1979.
- Boyne, Walter J., and Lopez, Donald S., editors. *The Jet Age: Forty Years of Jet Aviation*. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Jet Fighters." In *The Jet Age: Forty Years of Jet Aviation*, pp. 47-68. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Jet Bombers." In *The Jet Age: Forty Years of Jet Aviation*, pp. 89-100. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Jet Airliners." In *The Jet Age: Forty Years of Jet Aviation*, pp. 125-40. Washington, D.C.: Smithsonian Institution Press, 1979.

##### Center for Earth and Planetary Studies

- Abdel-Rahman, M., and El-Baz, F. "Detection of a Probable Ancestral Delta of the Nile River." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 511-20. NASA SP-412, 1979.
- Andre, C. G.; Maxwell, T. A.; El-Baz, F.; and Adler, I. [Abstract] "Chemical Diversity of the Lunar Light Plains From Orbital X-ray Data." In *Papers Presented to the Conference on the Lunar Highlands Crust*, pp. 1-2. Houston: The Lunar and Planetary Institute, 1979.
- Andre, C. G.; Wolfe, R. W.; and Adler, I. "Are Early Magnesium-rich Basalts Widespread on the Moon?" In *Proceedings of the Tenth Lunar and Planetary Science Conference*, pp. 1739-51. New York: Pergamon Press, 1979.
- Chaikin, A. L.; Maxwell, T. A.; and El-Baz, F. [Abstract] "Photogeologic Studies of the Cerberus Albedo Feature of Mars." *Reports of Planetary Geology Program, 1979-1980*, pp. 43-45. NASA TM-81776, 1980.
- El-Baz, F. "Color of Desert Surfaces in the Arabian Peninsula." In *Apollo-*

- Soyuz Test Project Summary Science Report*, vol. 2, pp. 285–99. NASA SP-412, 1979.
- , ed. *Catalog of Earth Photographs from the Apollo-Soyuz Test Project*. NASA TM-58218, 1979.
- . "The New Mars." *Interdisciplinary Science Reviews* 4(4)(1979):315–17.
- . "Deserts." *World Environment Report* 6(1,2)(1980):7–8.
- . "Lunar and Planetary Toponomy." *Air and Space* 3(4)(1980):10–11.
- . "The Necessity for the Application of Advanced Cartographic Technology in Developing Nations." In *Fourteenth International Symposium on Remote Sensing of Environment, April 23–30, 1980*, p. 79. Instituto Geografico National, San Jose, Costa Rica, 1980.
- . "Journey Into Northern China: Impressions of a Scientist." *Explorers Journal* 58(2)(1980):60–65.
- . [Abstract] "Quaternary Climatic Changes and the Formation of the Eastern Sahara." In *Résumés of 26 Congrès Géologique International, 7–17 Juillet 1980* 2(11)(1980):819.
- . "Narrative of the Journey." *The Geographical Journal* 146(1)(1980):51–59.
- . "Future Work in the Southern Part of the Western Desert." *The Geographical Journal* 146(1)(1980):91–93.
- El-Baz, F.; Boulos, L.; Breed, C.; Dardir, A.; Dowidar, H.; El-Etr, H.; Embabi, N.; Grolier, M.; Haynes, C. V.; Ibrahim, M.; Issawi, B.; Maxwell, T. A.; McCauley, J. F.; McHugh, W.; Moustafa, A.; and Yousif, M. "Journey to the Gifl Kebir and Uweinat, Southwest Egypt, 1978." *The Geographical Journal* 146(1)(1980):51–93.
- El-Baz, F.; Breed, C. S.; Grolier, M. J.; and McCauley, J. F. "Eolian Features in the Western Desert of Egypt and Some Applications to Mars." *Journal of Geophysical Research* 84(B14)(1979):8205–21.
- El-Baz, F., and El-Etr, H. A. "Color Zoning in the Western Desert of Egypt." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 203–17. NASA SP-412, 1979.
- El-Baz, F.; Issawi, B.; El-Etr, H.; Breed, C.; Dardir, A.; Maxwell, T.; McCauley, J.; and Grolier, M. [Abstract] "Geological Observations in Southwestern Egypt." *Abstracts for Fifth Conference on African Geology*, p. 25, Geological Survey of Egypt, 1979.
- El-Baz, F., and Maxwell, T. A. [Abstract] "Geological Constraints on Archaeological Sites in the Western Desert of Egypt." *Geological Society of America, 1979 Annual Meeting, Abstracts with Programs*, vol. 2, p. 420, 1979.
- . "Eolian Streaks in Southwestern Egypt and Similar Features in the Cerberus Region of Mars." *Proceedings of the Tenth Lunar and Planetary Science Conference*, pp. 3017–30. New York: Pergamon Press, 1979.
- . "Wind Streaks in the Uweinat Region and Mars." *The Geographical Journal* 146(1)(1980):90–91.
- El-Baz, F., and Prestel, D. J. [Abstract] "Desert Varnish on Sand Grains from the Western Desert of Egypt: Importance of the Clay Component and Implications to Mars." *Lunar and Planetary Science XI*, pp. 254–56. Houston: Lunar and Planetary Institute, 1980.
- El-Baz, F.; Slezak, M.; and Maxwell, T. A. "Preliminary Analysis of Color Variations of Sand Deposits in the Western Desert of Egypt." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 237–62. NASA SP-412, 1979.
- El-Baz, F., and Warner, D. M., eds. *Apollo-Soyuz Test Project Summary Science Report*, vol. 2. NASA SP-412, 1979.
- El-Baz, F.; Warner, D. M.; and Anders, F. "Comparison of Astronaut Visual Color Observations with ASTP Photographs." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 635–44. NASA SP-412, 1979.



- El-Baz, F.; Warner, D.; and Giuli, R. "Summary of Significant Results." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 1–8. NASA SP-412, 1979.
- El-Etr, H., and El-Baz, F. "Utilization of ASTP Photographs in the Study of Small Structures in Abu Rawash and Wadi el Natrun, Egypt." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 107–18, NASA SP-412, 1979.
- El-Etr, H.; Embabi, N.; and Yousif, M., eds. *Geologic-Geomorphic Studies in the Egyptian Deserts*. Cairo: Ain Shams University, 1980.
- El-Etr, H.; Moustafa, A.; and El-Baz, F. "Photolineaments in the ASTP Stereostrip of the Western Desert of Egypt." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 97–105. NASA SP-412, 1979.
- Gifford, A. W. "Think along with Planetary Scientists about Planetary Feature Terms." *Air and Space* 3(4)(1980):16.
- Gifford, A. W., and El-Baz, F. [Abstract] "Distribution and Ages of Light-Colored Plains on the Moon." In *Conference on the Lunar Highlands Crust, 14–16 November 1979*, pp. 1–23. Houston: Lunar and Planetary Institute, 1979.
- Gifford, A. W., and Maxwell, T. A. "Asymmetric Terracing of Lunar Highland Craters." *Proceedings of the Tenth Lunar and Planetary Science Conference*, pp. 2597–607. New York: Pergamon Press, 1979.
- Gifford, A. W., and Maxwell, T. A. [Abstract] "Ridge Systems of Caloris: Comparison with Lunar Basins." In *Lunar and Planetary Science XI*, pp. 327–29. Houston: Lunar and Planetary Institute, 1980.
- Gifford, A. W.; Warner, D.; and El-Baz, F. "Orbital Observations of Sand Distribution in the Western Desert of Egypt." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 219–36. NASA SP-412, 1979.
- Hamdan, A. H., and El-Baz, F. [Abstract] "Orientation of Central Peaks in Craters on Mars." *Lunar and Planetary Science XI*, pp. 388–89. Houston: Lunar and Planetary Institute, 1980.
- Head, J. W., and Gifford, A. W. "Lunar Mare Domes: Classification and Modes of Origin." *The Moon and the Planets* 22(1980):235–38.
- Lamar, N.; Lockwood, H.; and D'Alli, R. "Film Selection for the Earth Observations and Photography Experiment." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 645–54. NASA SP-412, 1979.
- Lin, R. P.; El-Baz, F.; Hood, L. L.; Runcorn, S. K.; and Schultz, P. H. [Abstract] "Magnetic Anomalies Antipodal to Large Impact Basins." *Lunar and Planetary Science XI*, pp. 626–27. Houston: Lunar and Planetary Institute, 1980.
- Lockwood, H.; Perry, L.; and Wolfe, R. "Film Exposure Calculations." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 645–54. NASA SP-412, 1979.
- Maxwell, T. A. [Abstract] "Erosional Development of the Southern Gilf Kebir Plateau, Southwestern Egypt." *Geological Society of America, 1979 Annual Meeting, Abstracts with Programs*, vol. 2, pp. 473–74, 1979.
- . "Suspended Sediment Dispersal Patterns of Rivers Photographed by ASTP." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 521–30. NASA SP-412, 1979.
- . "Geomorphology of the Gilf Kebir." *The Geographical Journal* 146(1) (1980):76–83.
- . [Abstract] "Transportation and Deposition of Particulate Material on the Surface of Mars: Inferences from Sand Sheet Deposits in the Western Desert of Egypt." *Reports of Planetary Geology Program, 1979–1980*, pp. 393–95. NASA TM-81776, 1980.
- McCauley, J.; Breed, C.; El-Baz, F.; Witney, M.; Grolier, M.; and Ward, A. "Pitted and Fluted Rocks in the Western Desert of Egypt: Viking Comparisons." *Journal of Geophysical Research* 84(B14)(1979):8222–32.

- McCauley, J. F.; Breed, C. S.; Grolier, M. J.; and El-Baz, F. "Pitted Rocks and Other Ventifacts in the Western Desert. *The Geographical Journal* 146(1) (1980):84-85.
- McLafferty, S.; Pryslak, M.; and Maul, G. "Determining Photographic Locations over Oceans." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 359-70. NASA SP-412, 1979.
- Prestel, D. J.; Wainwright, J. F.; and El-Baz, F. [Abstract] "Mineralogy and Morphology of the Coatings on Sand Grains From the Gilf Kebir, Southwest Egypt." *EOS* 60(46)(1979):872.
- . [Abstract] "Studies of the Coatings on Sand Grains From the Gilf Kebir, Southwest Egypt." *Reports of Planetary Geology Program, 1979-1980*, pp. 238-40. NASA TM-81776, 1980.
- Slezak, M., and El-Baz, F. "Temporal Changes as Depicted on Orbital Photographs of Arid Regions in North Africa." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 262-72. NASA SP-412, 1979.
- Strain, P. L., and El-Baz, F. [Abstract] "Ina, A Lunar Caldera?" *Lunar and Planetary Science XI*, pp. 1103-5. Houston: Lunar and Planetary Institute, 1980.
- . "Smythii Basin Topography and Comparisons with Orientale." In *Proceedings of the Tenth Lunar Planetary Science Conference*, pp. 2609-21. New York: Pergamon Press, 1979.
- Tisdall, T., and El-Baz, F. "Analysis of Water Color as Seen in Orbital and Aerial Photographs of Cape Cod, Nantucket, and Martha's Vineyard, Massachusetts." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 455-80. NASA SP-412, 1979.
- Warner, D. M. "ASTP Photographs of Southeastern Angola." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 273-84. NASA SP-412, 1979.
- Warner, D. M., and El-Baz, F. "Monte Desert of San Juan, Argentina, as Photographed by ASTP." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 301-18. NASA SP-412, 1979.
- Wolfe, R. W. [Abstract] "Optical Power Spectrum Analysis of Martian Terrains." *Reports of Planetary Geology Program, 1979-1980*, pp. 323-25. NASA TM-81776, 1980.
- Wolfe, R. W., and Kaplan, S. [Abstract] "Statistical Pattern Recognition As an Aid in Geologic Interpretation of Martian Terrains." *Lunar and Planetary Science XI*, pp. 1268-70. Houston: Lunar and Planetary Institute, 1980.
- Wood, C. A. [Abstract] "New Observations of Martian Basins." *Lunar and Planetary Science XI*, pp. 1271-73. Houston: Lunar and Planetary Institute, 1980.
- Wood, C. A., and Gifford, A. W. [Abstract] "Crater Distributions and the Evolution of the Lunar Farside Highlands." In *Reports of Planetary Geology Program, 1979-1980*, pp. 111-13. NASA TM-81776, 1980.
- Yentsch, C., and El-Baz, F. "Estimate of Total Reflectance from the Orinoco River Outflow." In *Apollo-Soyuz Test Project Summary Science Report*, vol. 2, pp. 499-503. NASA SP-412, 1979.

#### *Department of Aeronautics*

- Crouch, Tom D. "The Road to Kitty Hawk." *USAir*, 2(6)(1980):64.
- Crouch, Tom D.; Oakes, Claudia M.; and Hallion, Richard P. *Early Flight: From Dream to Reality*. Washington, D.C.: National Air and Space Museum, 1980.
- Kelsey, Benjamin S. "Designing an Airplane for Aerobatics." *Exxon Air World*, 32(2)(1980):18.
- Lopez, Donald S., and Boyne Walter J., eds. *The Jet Age: Forty Years of Jet Aviation*. Washington, D.C.: Smithsonian Institution Press, 1979.



- Lopez, Donald S., and Boyne, Walter J. "Jet Fighters." pp 47–68 in *The Jet Age: Forty Years of Jet Aviation*. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Jet Bombers." In *The Jet Age: Forty Years of Jet Aviation*, pp 89–100. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Jet Airliners." In *The Jet Age: Forty Years of Jet Aviation*, pp. 125–40. Washington, D.C.: Smithsonian Institution Press, 1979.
- Mikesh, Robert C. *Aircraft in Museums Around the World*, sections 1 and 2. Washington, D.C.: National Air and Space Museum, 1980.
- . "Albatros D. Va." *Famous Aircraft of the National Air and Space Museum*, no. 4. Washington, D.C.: Smithsonian Institution Press, 1980.
- . *B-57 Canberra At War 1964–1972*. Shepperton, England: Ian Allan.
- . "Lockheed C-121A Constellations in USAF and Civilian Service." *American Aviation Historical Society Journal* 25(1)(1980):10.
- . "The Clipper Connection." *Air Line Pilot*, 49(4)(1980):26.
- Oakes, Claudia M. "Those Magnificent Women in Their Flying Machines." *Air and Space* 3(4)(1980).
- . "Women Parachutists." *Air and Space* 3(5)(1980).
- Sweeting, C. G. "Parachutes." *Air and Space* 3(5)(1980).
- Wooldridge, E. T. "P-80 Shooting Star: Evolution of a Jet Fighter." *Famous Aircraft of the National Air and Space Museum*, no. 3. Washington, D.C.: Smithsonian Institution Press, 1979.

#### *Department of Space Science and Exploration*

- Chamberlain, Von Del, ed. *Sky Interpretation Resource Bulletin*, vol. 4. American Astronomical Society, 1980.
- . "Think Along With Astronomers About Solar Ups and Downs." *Air and Space* 3(3)(1980).
- . "New Eyes on the Universe." *Air and Space* 3(4)(1980).
- . [Review] *An Observer's Guide to the Universe Beyond the Solar System*, by Robert Burnham, Jr. *Archaeoastronomy Bulletin* 3(2)(Spring 1980).
- Corn, Joseph [Guggenheim Fellow] "Making Flying 'Thinkable,' Women Pilots and the Selling of Aviation, 1927–1940." *American Quarterly* 31(Fall 1979).
- Hanle, Paul A., ed. "High Technology on Earth: Studies in Using Aerospace Systems and Methods." *Smithsonian Studies in Air and Space*, no. 3. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "The Schrödinger-Einstein Correspondence and the Sources of Wave Mechanics." *American Journal of Physics* 47(1979):644–48.
- Kennedy, Gregory P. "Solar Power Satellites." *Air and Space* 3(3)(1980).
- . "Space Shuttle Update." *Air and Space* 3(5)(1980).
- Winter, Frank H., and Hallion, Richard P. "Out of the Past—An Aerospace Chronology." *Aeronautics and Astronautics* (October 1979–September 1980).
- Winter, Frank H.; Schmitt, Frederick P.; and DeJong, Cornelis. *Thomas Welcome Roys: America's Pioneer of Modern Whaling*. Charlottesville, Va.: University Press of Virginia, 1980.
- . "Ernst Loebell (1902–1979)." *Space Flight* 22(5)(May 1980).
- . "Cleveland Rocket Society Cachet Mystery Solved." *The Airpost Journal* 51(8)(May 1980).
- . "The Earliest Space Photography Concepts." In *Proceedings of the Eighth Semana Astronautica Barcelona*: Spanish Astronautical Society, 1980.
- . "The American Rocket Society Story—1930–1962." *Journal of the British Interplanetary Society Space Chronicle* 33(8)(August 1980).

#### *Division of Education Services*

- Joels, Kerry M., and Podolske, Helen W., eds. *Proceedings of a Conference on Multi-Cultural Aerospace Education Programs in Schools and Museums—June 11–12, 1979*. Washington, D.C.: National Air and Space Museum, 1979.



NATIONAL MUSEUM OF MAN, CENTER FOR THE STUDY OF MAN

NATIONAL ANTHROPOLOGICAL FILM CENTER

- Sorenson, E. Richard. "Les Documents Filmes La Connaissance De L'Homme et L'Avenir." In *Cahiers De L'Homme: Pour Une Anthropologie Visuelle*, ed. C. De France. Paris: Mouton, 1979.
- . Research photograph contributed to *Culture, People, and Nature*, by Marvin Harris, 3d ed. New York: Harper & Row, 1980.
- Sorenson, E. Richard, and Neuberger, Gay C., with the staff of the NAFC and the Executive Committee of the Advisory Council. "The History of the NAFC, 1967–1979." Supplement 6 to *The National Anthropological Film Center, A Report On Its Beginnings and Programs*. Washington, D.C.: NAFC, 1979.
- . "The Program for Visual Data Resources Development." Supplement 7 to *The National Anthropological Film Center, A Report on Its Beginnings and Programs*. Washington, D.C.: NAFC, 1979.
- Sorenson, E. Richard; Schechter, Steven C.; and Dorjee, Ragpa. *Ladakh Village Morning*, project produced and directed by E. Richard Sorenson and Gyatsho Tshering. Washington, D.C., 1980.

RESEARCH INSTITUTE ON IMMIGRATION AND ETHNIC STUDIES

- Bryce-Laporte, Roy S., ed., with assistance of Mortimer, Delores M., and Couch, Stephen R. *Sourcebook on the New Immigration: Implications for the United States and the International Community*. New Brunswick, N.J.: Transaction Books for the Smithsonian Institution, 1979.
- . *Supplement to the Sourcebook on the New Immigration*. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "New York City and the New Caribbean Immigration: A Contextual Statement." *International Migration Review* 8(2)(Summer 1980).
- Cohen, Lucy M. *Culture, Disease, and Stress Among Latinos*. Washington, D.C.: Smithsonian Institution Press, 1979.
- Couch, Stephen R., and Bryce-Laporte, Roy S., eds. *Quantitative Data and Immigration Research*. Washington, D.C.: Smithsonian Institution Press, 1979.

NATIONAL MUSEUM OF NATURAL HISTORY

Department of Anthropology

- Angel, J. Lawrence. "Physical Anthropology." In *Mummies of the World*, ed. T. A. Cockburn and E. Cockburn, chap. 14. New York: Cambridge University Press, 1980.
- Axtell, James, and Sturtevant, William C. "The Unkindest Cut, or Who Invented Scalping?" *William and Mary Quarterly* 37(3)(1980):451–72, 3d series.
- Brooks, Alison S.; Selig, Ruth O.; and Lanouette, JoAnne. "The Educator's Guide to *Odyssey*." Public Broadcasting Associates, Inc., February 1980.
- Burch, Ernest S., Jr. "The Thule-Historic Eskimo Transition on the West Coast of Hudson Bay." In *Thule Eskimo Culture: An Anthropological Retrospective*, ed. Allen P. McCartney, pp. 189–211. Ottawa: National Museum of Man, Archaeological Survey of Canada Paper No. 88, 1979.
- . "The Ethnography of Northern North America: A Guide to Recent Research." *Arctic Anthropology* xvi(1)(1979):62–1496.
- . "Indians and Eskimos in North Alaska, 1816–1977: A Study in Changing Ethnic Relations." *Arctic Anthropology* xvi(2)(1979):123–51.
- . "Traditional Eskimo Societies in Northwest Alaska." In *Alaska Native Culture and History*, ed. Yoshinobu Kotani and William Workman, pp. 253–304. Suita, Japan: National Museum of Ethnology (Senri Ethnological Studies No. 4), 1980.

- Burch, Ernest S., Jr., and Smith, James G. E. "Chipewyan and Inuit in the Central Canadian Subarctic, 1613-1977." *Arctic Anthropology* xvi(2)(1979): 76-701.
- Cassidy, Claire M. "Diagnosis of Arthritis in Dry Bones." *Henry Ford Hospital Journal* 27(1979):68-69.
- . "Benign Neglect and Toddler Malnutrition." In *Social and Biological Predictors of Nutritional Status, Physical Growth, and Neurological Development*, eds. L. S. Greene and F. Johnston. New York: Academic Press, 1980.
- . "Nutrition and Health in Agriculturalists and Hunter-Gatherers: A Case Study of Two Prehistoric Populations." In *Nutritional Anthropology*, eds. N. Jerome, R. Kandel, and G. Peltó. Redgrave Publishing Co, 1980.
- Crocker, William H. "Canela 'Group' Recruitment and Perpetuity: Incipient 'Unilineality'?" In *Actes (XLII<sup>e</sup>) Congres International des Américanistes*, Paris, 1976):2259-275, 1977.
- . "Estórias das Epocas de Pré e Pós-Pacificação dos Ramkókamekra e Apâniekra-Canelas." *Boletim do Museu Paraense Emílio Goeldi, Nova Série: Antropologia* 68, Belém 1978.
- . "Canela Kinship and the Question of Matrilineality." In *Brazil, Anthropological Perspectives*, ed. M. L. Margolis and W. E. Carter, pp. 225-49. New York: Columbia University Press, 1979. (Essays in honor of Charles Wagley).
- Ewers, John C. "Images of the White Man in 19th Century Plains Indian Art." In *World Anthropology. The Visual Arts, Plastic and Graphic*, ed. Justine M. Cordwell, pp. 411-29. The Hague: Mouton Publishers, 1979.
- . *George Catlin, Painter of American Indians*. [text accompanying slide set] Coordinated by Sarah McAnulty Quilter. Washington, D.C.: Office of Printing and Photographic Services, Smithsonian Institution, 1979.
- . "Climate, Acculturation and Costume: A History of Women's Clothing Among the Indians of the Southern Plains." In *Plains Anthropologist* 25-87 (1980):63-83.
- , ed. *Indian Art in Pipestone. George Catlin's Portfolio in the British Museum*. British Museum Publications, Ltd. and Smithsonian Institution Press. Washington, D.C., 1979.
- Fitzhugh, William W. "A Prehistoric Caribou Fence From Williams Harbor, Northern Labrador." In *Megaliths to Medicine Wheels; Proceedings from a Symposium*, Chacmool Archaeological Society, University of Calgary, October 1978 (1980).
- . "Les Modes d' adaptation bases sur le caribou dans les regions centrale et septentrionale du Labrador." In *le Dossier Caribou*, ed. Francois Trudel, *Recherches Amerindiennes au Quebec* 9(1-2)(1979):55-70.
- . "Preliminary Report on the Torngat Archeological Project." *Arctic* 33(3)(1980).
- . "A Review of Paleo-Eskimo Culture History in Southern Labrador and Newfoundland." *Etudes/Inuit/Studies* 3(1980).
- Fowler, Don D., and Matley, John F. "Material Culture of the Numa: The John Wesley Powell Collection, 1867-1880." *Smithsonian Contributions to Anthropology* 26. Washington, D.C.: Smithsonian Institution Press, 1980.
- Frolich, Bruno, and Kopjanski, David. "Rapport Preliminare sur les squelettes excaves dans les tombs aux AG et AO." In *Fouilles Danoise a Carthage*, ed. Søren Dietz and Steffen Trolle. Working papers #10, Danish National Museum, Copenhagen, Denmark, 1979.
- Goddard, R. H. Ives, III. "Synonymy" in the chapters "Pueblos: Introduction," "Taos Pueblo," "Picuris Pueblo," "Santa Clara Pueblo," "San Ildefonso Pueblo," "Pojoaque Pueblo," "Sandia Pueblo," "Isleta Pueblo," "Cochiti Pueblo," "Santo Domingo Pueblo," "San Felipe Pueblo," "Santa Ana Pueblo," "Zia Pueblo," "Jemez Pueblo," "Pecos Pueblo," "Laguna Pueblo," "Acoma Pueblo," and "Hopi-Twa." In *Southwest*, ed. Alfonso Ortiz. *Handbook of*



- North American Indians* 9:234–35, 267, 275–77, 306–7, 315–16, 328–29, 349, 364, 377, 388, 397, 406, 417, 429, 436–37, 448–49, 464–66, 601. W. Sturtevant, general editor. Washington, D.C.: Smithsonian Institution, 1979.
- . "Technical Alphabet." In *Southwest*, ed. Alfonso Ortiz. *Handbook of North American Indians* 9:x. W. Sturtevant, gen. ed. Washington, D.C.: Smithsonian Institution, 1979.
- . [Translation of sections of a Delaware-language text] In "Delaware Big House Ceremonial." In *Native North American Spirituality of the Eastern Woodlands*, ed. Elisabeth Tooker, pp. 104–24. New York: Paulist Press, 1979.
- . "Comparative Algonquian." In *The Languages of Native America: Historical and Comparative Assessment*, eds. Lyle Campbell and Marianne Mithun, pp. 70–132. Austin: University of Texas Press, 1979.
- . "The Languages of South Texas and the Lower Rio Grande." In *The Languages of Native America: Historical and Comparative Assessment*, eds. Lyle Campbell and Marianne Mithun, pp. 355–89. Austin: University of Texas Press, 1979.
- . "Eastern Algonquian as a Genetic Subgroup." In *Papers of the Eleventh Algonquian Conference*, ed. W. Cowan, pp. 143–58. Ottawa: Carleton University, 1980.
- , linguistic ed. *Southwest*, ed. Alfonso Ortiz. *Handbook of North American Indians* 9. William Sturtevant, gen. ed. Washington, D.C.: Smithsonian Institution, 1979.
- Goddard, R. H. Ives, III, and Frigout, Arlette. "The Hopi Lunar Calendar." In *Hopi Ceremonial Organization*. Washington, D.C.: Smithsonian Institution, 1979 (1980).
- Goddard, R. H. Ives, III, and Fitzhugh, William W. "A Statement Concerning America B.C." In *Man in the Northeast* 17(1979):166–72.
- Houchins, Chang-su. "Chōsen minzokuga ni okeru tora no mōchifu (Tiger motifs in ethnological art of the Yi Period)." In *The Han* 8(11):61–67. Tokyo: Tokyo Institute for Korean Studies, November 1979.
- Kaeppler, Adrienne L. "Hawaiian Art: An Anthropological Perspective." *Educational Perspectives* 19(1)(1980):10–15.
- . *Kapa: Hawaiian Bark Cloth*. Hilo, Hawai'i: Bob Boom Books, 1980.
- . *Pahu and Pūniu: An Exhibition of Hawaiian Drums*. Bernice Pauahi Bishop Museum, Department of Anthropology. 1980.
- . "The Persistence of Tradition." [Introductory Essay] In *Hawai'i: The Royal Isles*, by Roger G. Rose, pp. 53–62. Bernice Pauahi Bishop Museum Special Publication 67.
- Koritzer, R. T., and St. Hoyme, Lucile E. "A Prehistoric Example of Severe Tempo-Mandibular Arthritic Change in the Presence of a Well Balanced Dentition." In *Dental Surveys* 56(9)(1980):28–29.
- Laughlin, Robert M. "Tzotzil Texts." In *Mayan Texts II*, ed. Lauanna Furbee-Losee, *IJAL-NATS Monograph* 3(1979):136–46.
- . "Of Shoes and Ships and Sealing Wax: Sundries from Zinacantán." *Smithsonian Contributions to Anthropology* 25. Washington, D.C.: Smithsonian Institution Press, 1980.
- Laughlin, William S.; Jørgensen, J. B.; and Frøhlich, B. "Aleuts and Eskimos: Survivors of the Bering Land Bridge Coast." In *The First Americans*, ed. William S. Laughlin and Albert B. Harper. New York: Gustav Fisher, 1979.
- Meggers, Betty J. "América Pré-Histórica. Tradução de Eliana Teixeira de Carvalho (Translation of *Prehistoric America*, 1972), p. 242. Rio de Janeiro: Paz e Terra, 1979.
- . *Prehistoric America: An Ecological Perspective*, 2d ed. New York: Aldine Publishing Co., 1979.
- Meggers, Betty J., and Evans, Clifford. "An Experimental Reconstruction of



- Taruma Village Succession and Some Implications." In *Brazil: Anthropological Perspectives*, ed. Maxine L. Margolis and William E. Carter, pp. 39–60. New York: Columbia University Press, 1979.
- Ortiz, Alfonso, and Goddard, R. H. Ives, III. "Synonymy" in the chapter "Tesuque Pueblo." In *Southwest*, ed. Alfonso Ortiz. *Handbook of North American Indians* 9, p. 335. W. Sturtevant, gen. ed. Washington, D.C.: Smithsonian Institution, 1979.
- Ortner, D. J. "Disease and Mortality in the Early Bronze Age people of Bab edh-Dhra, Jordan." *American Journal of Physical Anthropology* 51(1979): 589–98.
- . "Focus: The First International Conference on the History and Archaeology of Jordan." *Jordan* (July, 1980).
- . "Bone Tumors in Archeological Human skeletons (Paleopathology of Human Bone Tumors)." In *Comparative Pathology of Abnormal Growth*, ed. Hans E. Kaiser, chap. 46. Baltimore: Williams & Wilkins, 1980.
- Phebus, George, "Art Swords in the Smithsonian." *Bushido* 1(3)(1980):8–15.
- Richman, E. A.; Ortner, D. J.; and Schuller-Ellis, F. P. "Differences in Intracortical Bone Remodeling in Three Aboriginal American Populations: Possible Dietary Factors." *Calcified Tissue International* 28(3)(1979):209–14.
- Schroeder, Albert H., and Goddard, R. H. Ives, III. "Synonymy" in the chapters "Zuni History, 1850–1970" and "Hopi Social Organization." In *Southwest*, ed. Alfonso Ortiz. *Handbook of North American Indians* 9, pp. 479–81, 550–53. W. Sturtevant, gen. ed. Washington, D.C.: Smithsonian Institution, 1979.
- Schuller-Ellis, F. P. "Evidence of Handedness on Documented Skeletons." *Journal of Forensic Sciences* 25(3)(1980).
- Smith, Bruce D. "The Mound Builders." In *The American Land*. Washington, D.C.: Smithsonian Exposition Books, 1980.
- Spiers, Randal H., and Goddard, R. H. Ives, III. "Synonymy" in the chapter "Nambe Pueblo." In *Southwest*, ed. Alfonso Ortiz. *Handbook of North American Indians* 9, p. 322. W. Sturtevant, gen. ed. Washington, D.C.: Smithsonian Institution, 1979.
- Stewart, T. D. "J. Lawrence Angel." *American Journal of Physical Anthropology* 51(4)(1979):507–16.
- . "Patterning of Skeletal Pathologies and Epidemiology." In *The First Americans: Origins, Affinities, and Adaptations*, eds. William S. Laughlin and Albert B. Harper, chap. 11, pp. 257–74. New York: Gustav Fischer, 1979.
- . "The Medial Clavicular Epiphysis: A New Assessment of its Reliability as an Age Indicator." Program of the thirty-second Annual Meeting of the American Academy of Forensic Sciences, New Orleans, Louisiana, February 20–23, 1980. Abstract 147(1980):93.
- St. Hoyme, Lucile E. [Comment] "Brace: Australian Tick. *Current Anthropology* 21(1980):58–159.
- St. Hoyme, Lucile E., and Koritzer, R. T. "Extensive Caries in Early Man Circa 110,000 Years before Present." *Journal of American Dental Association* 99(1979):642–43.
- . "Jaw Forces: Comment." *Journal of American Dental Association* 100 (1980):14.
- Sturtevant, William C. "Preface" and "Southeastern Indian Formulas." In *Native North American Spiritually of the Eastern Woodlands: Sacred Myths, Dreams, Visions, Speeches, Healing Formulas, Rituals, and Ceremonials*, ed. Elisabeth Tooker, pp. xi–xvii, 282–93. New York: Paulist Press, 1979.
- . [Translation from the German on pp. 45–50, plus *passim* identifications and translations of Creek and Yuchi terms.] In *Von Reck's Voyage: Drawings and Journal of Philip Georg Friedrich von Reck*, ed. Kristian Hvidt with the assistance of Joseph Ewan, George F. Jones, and William C. Sturtevant. Savannah: The Beehive Press, 1980.

- . "Black Drink and Other Caffeine-Containing Beverages among Non-Indians." In *Black Drink, A Native American Tea*, ed. Charles M. Hudson, pp. 150–65. Athens, Ga.: University of Georgia Press, 1979.
- . "CoEvolution Quarterly." *Used Magazines* 21(1979):113–14.
- . "President Sturtevant's Report." *Council for Museum Anthropology Newsletter* 4(1)(1979):4–5.
- . "Cannibalism." [letter to the editor] *Times Literary Supplement* 4015 (1980).
- . "The First Inuit Depiction by Europeans." *Etudes Inuit Studies* 4(1–2) (1980):47–49.
- , general editor. "Southwest," ed. Alfonso Ortiz. *Handbook of North American Indians* 9. Washington, D.C.: Smithsonian Institution, 1979.
- . "Review of Southeastern Indians Since the Removal Era," ed. Walter L. Williams. *American Ethnologist* 7(3)(1980):593–94.
- Ubelaker, Douglas H. "Skeletal Evidence for Kneeling in Prehistoric Ecuador." *American Journal of Physical Anthropology* 51(4):679–85.
- Ubelaker, D. H., and Jantz, R. L. "Plains Caddoan Relationships: The View From Craniometry and Mortuary Analysis." *Nebraska History* 60(2)(1979):249–59.
- Viola, Herman J., and Kvasnicka, Robert M., editors. *The Commissioners of Indian Affairs, 1824–1977*. Lincoln, Nebr.: The University of Nebraska Press, 1979.
- Wedel, Mildred Mott. The Ethnohistoric Approach to Plains Caddoan Origins. In "Toward Plains Caddoan Origins: A Symposium." *Nebraska History* 60(2)(1979):183–96.
- Wedel, Waldo R. "Holocene Cultural Adaptations in the Republican River Basin." In *The Great Plains, Environment and Culture*, eds. Brian W. Blouet and Frederick C. Luebke, pp. 1–25. Lincoln, Nebr.: University of Nebraska Press, 1979.
- . "House Floors and Native Settlement Populations in the Great Plains." *Plains Anthropologist* 24(84)(1979):85–98.
- . "Introduction," and "Some Reflections on Plains Caddoan Origins." In "Toward Plains Caddoan Origins: A Symposium." *Nebraska History* 60(2) (1979):131–33, 272–93.

#### Department of Botany

- Adolphi, K., and Nicolson, Dan H. "Proposal (69) to Amend Recommendation 75A.1 and Correction in the German Text." *Taxon* 29(4)(August 1980):517.
- Ayensu, Edward S., editor. *Jungles: The Most Mysterious of All Natural Worlds*. New York: Crown Publishers, 1980.
- . "Keeping the Wilderness." In *The American Land*, pp. 108–17. Washington, D.C.: Smithsonian Institution, 1979.
- . "Plants for Medicinal Uses—With Special Reference to Arid Zones." In *Arid Land Plant Resources*, pp. 117–18. Lubbock, Texas: Texas Tech University, 1979.
- . "Plants of Agricultural and Industrial Development in Africa." In *Feeding Africa*, pp. 130–47. Proceedings of the Second Symposium of Pan African Pugwash Group, Cairo, 1980.
- Bohlmann, F.; Dutta, L. N.; Knauf, W.; Robinson, H.; and King, R. M. "Neue Sesquiterpenlactone aus *Aster umbellatus*." *Phytochemistry* 19(1980):433–36.
- Bohlmann, F.; Dutta, L.; Robinson, H.; and King, R. M. "Neue Labdan-derivate aus *Chrysothamnus nauseosus*." *Phytochemistry* 18(1979):1889–92.
- . "Neue Sesquiterpenlactone aus *Eupatorium sessilifolium*." *Phytochemistry* 18(1979):1401–03.
- Bohlmann, F.; Fritz, U.; Robinson, H.; and King, R. M. "Isosesquicaren aus *Haplopappus tenuisectus*." *Phytochemistry* 18(1979):1749–50.



- Bohlmann, F.; Knauf, W.; King, R. M.; and Robinson, H. "Ein Neues Diterpen und Weitere Inhaltsstoffe aus *Baccharis*-arten." *Phytochemistry* 18(1979): 1011-14.
- Bohlmann, F.; Knoll, K.-H.; Robinson, H.; and King, R. M. "Neue Eudesmanolide aus *Steiractinia mollis*." *Phytochemistry* 19(1980):971-72.
- . "Neue Guaianolide aus *Cacosmia rugosa*." *Phytochemistry* 19(1980): 599-602.
- . "Neue Kauren-derivate und Melampolide aus *Smallanthus uvedalia*." *Phytochemistry* 19(1980):107-10.
- Bohlmann, F.; Jakupovic, J.; King, R. M.; and Robinson, H. "Neue Ent-Atisiren- und Ent-Kaurensäure-derivate aus *Helianthus*-arten." *Phytochemistry* 19(1980):863-68.
- Bohlmann, F.; Jakupovic, J.; Robinson, H.; and King, R. M. "Neue Diterpene aus *Schkuhria*-arten." *Phytochemistry* 19(1980):881-84.
- Bohlmann, F.; Rosenberg, E.; King, R. M.; and Robinson, H. "Neue Labdan-derivate aus *Aristeguietia buddleaefolia*." *Phytochemistry* 19(1980):977-79.
- Bohlmann, F.; Suding, H.; Cuatrecasas, J.; King, R. M.; and Robinson, H. "Neue Diterpene aus der Subtribus *Espeletiinae*." *Phytochemistry* 19(1980): 267-71.
- Bohlmann, F.; Suwita, A.; King, R. M.; and Robinson, H. "Neue Ent-Labdan-derivate aus *Austroeupatorium chaparense*." *Phytochemistry* 19(1980):111-14.
- . "Neue Guajanolide aus *Eupatorium rotundifolium*." *Phytochemistry* 19(1980):1233-34.
- Bohlmann, F.; Zdero, C.; Cuatrecasas, J.; King, R. M.; and Robinson, H. "Neue Sesquiterpene und Norditerpene aus Vertretern der Gattung *Libanothamnus*." *Phytochemistry* 19(1980):1145-48.
- Bohlmann, F.; Zdero, C.; Bohlmann, R.; King, R. M.; and Robinson, H. "Neue Sesquiterpene aus *Liabum*-arten." *Phytochemistry* 19(1980):579-82.
- Bohlmann, F.; Zdero, C.; King, R. M.; and Robinson, H. "Ein Neues Germacran-8, 12-olid und Neue Diterpene aus *Polymnia canadensis*." *Phytochemistry* 19(1980):115-18.
- . "Ein Neues Labdan-derivat und Neue Thymol-derivate aus *Bishovia boliviensis*." *Phytochemistry* 18(1979):1234-35.
- . "Neue Cadinen-derivate und Andere Inhaltsstoffe aus *Chromolaena*-arten." *Phytochemistry* 18(1979):1177-79.
- . "Neue Elemanolide und Guajanolide aus *Zinnia*-arten." *Phytochemistry* 18(1979):1343-48.
- . "Neue Eudesman-derivate aus *Pluchea suaveolens*." *Phytochemistry* 19(1980):969-70.
- . "Neue Labdan-derivate aus *Gutierrezia*-arten." *Phytochemistry* 18(1979):1533-37.
- . "Neue Melampolide aus *Smallanthus fruticosus*." *Phytochemistry* 19(1980):973-74.
- . "Neue Perezon-derivate aus *Acourtia thurberi*." *Phytochemistry* 18(1979):1894-95.
- . "Neue Sesquiterpenlactone aus *Stokesia laevis*." *Phytochemistry* 18(1979):987-89.
- . "New Heliangolides from *Conocliniopsis prasifolia*." *Phytochemistry* 19(1980):1547-49.
- . "New Prenylflavanoids from *Marshallia grandiflora*." *Phytochemistry* 18(1979):1246-47.
- . "New Sesquiterpene Lactones and other Constituents from *Fitchia speciosa*." *Phytochemistry* 19(1980):1141-43.
- . "Onoseriolid, Ein Neues Sesquiterpenlacton aus *Onoseris albicans*." *Phytochemistry* 19(1980):689-91.
- . "Weitere Isocedren-derivate aus *Trixis paradoxa*." *Phytochemistry* 18(1979):855-57.



- Bohlmann, F.; Zdero, C.; Robinson, H.; and King, R. M. "Neue Acetylenverbindungen aus *Chrysothamnus parryi*." *Phytochemistry* 18(1979):1519-21.
- . "Neue Amide aus *Spilanthus alba*." *Phytochemistry* 19(1980):1535-37.
- . "Neue Cadinen- und Norcadinen-derivate aus *Heterotheca grandiflora*." *Phytochemistry* 18(1979):1675-80.
- Calderón, Cleofé E., and Soderstrom, Thomas R. "The Genera of Bambusoideae (Poaceae) of the American Continent: Keys and Comments." *Smithsonian Contributions to Botany* 44. Washington, D.C.: Smithsonian Institution Press, 1980.
- Cowan, Richard S. "Leguminosae/Caesalpinioideae." In *Index Nominum Genericorum (Plantarum)*, eds. E. R. Farr, J. A. Leussink, and F. A. Stafleu. Utrecht and The Hague: Bohn, Scheltema & Holkema, 1979.
- Cuatrecasas, José. "Comparación Fitogeográfica de Paramos entre Varias Cordilleras. In *El Medio Ambiente Paramo*, Actas del Seminario de Merida, Venezuela, pp. 89-99, November 1978 ed. Caracas: Centro Estudios Avanzados, 1979.
- . "Growth Forms of the Espeletiinae and Their Correlation to Vegetation Types of the High Tropical Andes." In *Tropical Botany*, eds. K. Larsen and L. B. Holm-Nielsen, pp. 397-410. London: Academic Press, 1979.
- . "La Inflorescencia en la Taxonomía de las Espeletiinae (Heliantheae, Compositae)." In *Memorias, VI Congreso Venezolano de Botánica, U.C.V.*, pp. 191-94. Maracay, Venezuela: Facultad de Agronomía, 1980.
- . "Miscellaneous Notes on Neotropical Flora XI." *Phytologia* 45(1) (February 1980):17-29.
- Edwards, Phyllis; White, James J.; Nicolson, Dan H.; and Kiger, Robert W. *Indian Botanical Paintings*. Pittsburgh: The Hunt Institute for Botanical Documentation, Carnegie-Mellon University, 1980.
- Faden, Robert B. "The Taxonomy and Nomenclature of Some Asiatic Species of *Murdannia* (Commelinaceae): The Identity of *Commelina medica* Lour. and *Commelina tuberosa* Lour." *Taxon* 29(1)(1980):71-83.
- Fosberg, F. R. "Phytogeography of Micronesian Mangroves." In *Proceedings of International Symposium of Biological Management of Mangroves*, pp. 23-42. Gainesville, Fla.: The University of Florida Press, 1975.
- . "Tropical Floristic Botany—Concepts and Status—with Special Attention to Tropical Islands." In *Tropical Botany*, pp. 89-105. London: Academic Press, 1979.
- . "Whither Terrestrial Ecosystems?" In *Preservation of the Habitat of Man. Growth without Ecodisasters?*, pp. 64-93. London and Basingstoke: MacMillan Press, 1980.
- Fosberg, F. R.; Otobed, D.; Sachet, M.-H.; Oliver, R. L.; Powell, D. A.; and Canfield, J. E. *Vascular Plants of Palau with Vernacular Names*.
- Fosberg, F. R., and Renvoize, S. A. "The Flora of Aldabra and Neighbouring Islands." *Kew Bulletin Additional Series* VII. London: Her Majesty's Stationary Office, 1980.
- Fosberg, F. R., and Sachet, M.-H. "*Maesa* (Myrsinaceae) in Micronesia." *Phytologia* 44(5)(1979):362-69.
- . "Systematic Studies of Micronesian Plants." *Smithsonian Contributions to Botany* 45. Washington, D.C.: Smithsonian Institution Press, 1980.
- Hale, Mason E. "Generic Delimitation in the Lichen Family Thelotremaaceae." *Mycotaxon* 11(1)(1980):130-38.
- . "The Lichen Genus *Relicina* (Parmeliaceae) in India and Sri Lanka." *Bryologist* 83(1980):77-78.
- . "Taxonomy and Distribution of the *Parmelia flaventior* Group (Lichens: Parmeliaceae)." *Journal of the Hattori Botanical Lab* 47(1980):75-84.
- King, R. M., and Robinson, H. "Studies in the Eupatorieae (Asteraceae).

- CLXXVIII. Additions to *Eitenia* and *Lomatocoma*." *Phytologia* 44(7)(1979): 455–62.
- . "Studies in the Eupatorieae (Asteraceae). CLXXXIV. A New Species of *Arrojadocharis*." *Phytologia* 44(7)(1979):463–65.
- . "Studies in the Eupatorieae (Asteraceae). CLXXXV. Additions to the Genus *Lasiolaena*." *Phytologia* 44(7)(1979):466–72.
- . "Studies in the Eupatorieae (Asteraceae). CLXXXVI. A Review of the Genus *Stylotrichum*." *Phytologia* 45(2)(1980):101–4.
- . "Studies in the Eupatorieae (Asteraceae). CLXXXVII. Additions to *Trichogonia* and *Trichogoniopsis*." *Phytologia* 45(2)(1980):105–23.
- . "Studies in the Eupatorieae (Asteraceae). CLXXXVIII. New Species of *Mikania* from Brasil." *Phytologia* 45(2)(1980):124–41.
- . "Studies in the Eupatorieae (Asteraceae). CLXXXIX. Additions to *Acri-topappus*." *Phytologia* 45(2)(1980):142–57.
- . "Studies in the Eupatorieae (Asteraceae). CXC. A New Genus *Santosia*." *Phytologia* 45(6)(1980):463–66.
- King, R. M.; Robinson, H.; and Barroso, G. M. "Studies in the Eupatorieae (Asteraceae). CLXXVII. A New Genus, *Morithamnus*." *Phytologia* 44(7)(1979):451–54.
- Kirkbride, Joseph H., Jr. "Revision of the Genus *Psyllocarpus* (Rubiaceae)." *Smithsonian Contributions to Botany* 41. Washington, D.C.: Smithsonian Institution Press, 1979.
- Kral, R., and Smith, Lyman B. "Xyridaceae Brasiliae—I." *Bradea* 3 (9)(April 1980):57–64.
- Lellinger, D. B. "New Names for *Polypodium chnoodes* and *P. dissimile*." *American Fern Journal* 70(March 1980):30.
- Little, Elbert L., Jr. *The Audubon Society Field Guide to North American Trees*. 2 vols. Eastern Region, Western Region. New York: Knopf, 1980.
- . *Checklist of United States Trees (Native and Naturalized)*. U.S. Department of Agriculture Handbook no. 541. Washington, D.C.: U.S. Department of Agriculture, 1979.
- . *Forest Trees of the United States and Canada and How to Identify Them*. New York: Dover, 1980.
- Nicolson, Dan H. "Key to Identification of Effectively/Ineffectively Published Material." *Taxon* 29(4)(August 1980):485–88.
- . "*Moullava* (Rheede) Adanson, Recently *Wagatea* Dalzell (Fabaceae/Caesalpinoideae)." In *Botany and History of Hortus Malabaricus*, ed. K. S. Manilal, pp. 181–85. New Delhi, India: Oxford and IBH Publ. Co., 1980.
- . "Point of View on *Pseudolarix*." *Taxon* 29(2/3)(1980):318.
- Nicolson, Dan H., and Sivadasan, M. "Identification of *Gomphrena hispida* Linnaeus with *Acrocephalus* (Lamiaceae)." *Taxon* 29(2/3)(1980):324–25.
- Nowicke, Joan W., and Skvarla, John J. "Pollen Morphology: The Potential Influence in Higher Order Systematics." *Annals of the Missouri Botanical Garden* 66(4)(1979):633–700.
- Parker, K. F. "New combinations in *Tetraneuris* Green (Heliantheae, Asteraceae)." *Phytologia* 45(6)(June 1980):467.
- Read, R. W. "Notes on Palmae, I." *Phytologia* 46(August 1980):285–87.
- Robinson, H. "Five New Species of *Vernonia* from Brasil." *Phytologia* 46(2)(1980):107–19.
- . "*Harthamnus*, a New Genus of Mutisieae from Bolivia (Asteraceae)." *Phytologia* 45(6)(1980):451–55.
- . "A New Species of *Philonotis* from Bolivia (Musci: Bartramiaceae)." *Phytologia* 45(6)(1980):460–62.
- . "New Species of Vernonieae (Asteraceae). II. Five New Species of *Vernonia* from Bahia." *Phytologia* 44(4)(1979):287–99.



- . "New Species of Vernoniaceae (Asteraceae). III. Additions to *Piptocarpha*." *Phytologia* 44(4)(1979):300–6.
- . "New Species of Vernoniaceae (Asteraceae). IV. Three Additions to *Vernonia* from Ecuador and Peru." *Phytologia* 45(2)(1980):158–65.
- . "New Species of Vernoniaceae (Asteraceae). V. Additions to *Vernonia* from Brasil." *Phytologia* 45(2)(1980):166–208.
- . "New Species of Vernoniaceae (Asteraceae). VI. *Lychnophora souzae*." *Phytologia* 46(2)(1980):104–6.
- . "Notes on the Lychnophorine Genera *Chresta* and *Eremanthus* (Vernoniaceae: Asteraceae)." *Phytologia* 45(2)(1980):89–100.
- . "Studies in Heliantheae (Asteraceae). XXI. Additions to *Alloispermum*, *Galinsoga*, and *Tridax*." *Phytologia* 44(7)(1979):425–35.
- . "Studies in Heliantheae (Asteraceae). XXII. Two New Species of *Calea* from Brasil." *Phytologia* 44(7)(1979):436–41.
- . "Studies in the Heliantheae (Asteraceae). XXIII. New Andean Species of *Verbesina* and *Viguiera*." *Phytologia* 45(6)(1980):456–59.
- . "Studies in the Heliantheae (Asteraceae). XXIV. A New Subtribe, *Lycapsinae*." *Phytologia* 46(2)(1980):120.
- . "Studies in the Heliantheae (Asteraceae). XVIII. A New Genus *Helianthopsis*." *Phytologia* 44(4)(1979):257–69.
- . "Studies in the Heliantheae (Asteraceae). XIX. Four New Species of *Calea* from Brasil." *Phytologia* 44(4)(1979):270–79.
- . "Studies in the Heliantheae (Asteraceae). XX. Notes and New Species in *Clibadium*." *Phytologia* 44(4)(1979):280–86.
- . "Studies in the Liabeae (Asteraceae). XIV. New Species of *Liabum* and *Oligactis*." *Phytologia* 46(2)(1980):99–103.
- . "Three New Species of *Thrypticus* from Maryland (Diptera: Dolichopodidae)." *Proceedings of the Entomological Society of Washington* 82(3)(1980): 469–73.
- . "Two New Genera of Vernoniaceae (Asteraceae) from Brasil, *Heterocypselia* and *Pseudostiffia*." *Phytologia* 44(7)(1979):442–50.
- Robinson, H., and King, R. M. "*Mattfeldanthus mutisioides* gen. et spec. nov. (Asteraceae: Vernoniaceae) from Bahia, Brazil." *Willdenowia* 9(1)(1979):9–12.
- Sandved, Kjell B., and Emsley, Michael. *Rain Forests and Cloud Forests*. New York: Harry N. Abrams, 1979.
- Simpson, Beryl B. "A Revision of the Genus *Polylepis* (Rosaceae: Sanguisorbeae)." *Smithsonian Contributions to Botany* 43. Washington, D.C.: Smithsonian Institution Press, 1979.
- Skog, Laurence E. "Allergies to Gesneriads." *The Gloxinian* 30(1)(1980):11–12.
- . "Developments in the Study of the Chinese Gesneriaceae." *The Gloxinian* 29(5)(1979):28–29.
- . "Hunting for Gesneriads." *The Light Touch* 10(3)(1980):2–3.
- Smith, Lyman B. "Julian A. Steyermark." *Journal of the Bromeliad Society* 29(5)(October 1979):195–201.
- Smith, Lyman B., and Downs, R. J. "Bromelioideae, Bromeliaceae." *Flora Neotropica*, Monograph no. 14, pt. 3 (December 1979): 1493–2142.
- Smith, Lyman B., and Wasshausen, D. C. "*Begonia* of Ecuador." *Phytologia* 44(4)(October 1979):233–56.
- Soderstrom, Thomas R., and Calderon, C. E. "*Arberella* (Poaceae: Bambusoideae): A New Genus from Tropical America." *Brittonia* 31(4)(October–December 1979):433–45.
- . "A Commentary on the Bamboos (Poaceae: Bambusoideae). *Biotropica* 11(3)(September 1979):161–72.
- . "Ecology and Phytosociology of Bamboo Vegetation." In *Ecology of Grasslands and Bamboolands in the Worlds*, ed. M. Numata, pp. 223–36. Jena: VEG Gustav Fischer Verlag, 1979.



- Wurdack, John J. "Certamen Melastomataceis XXXI." *Phytologia* 45(4)(1980): 321–35.
- . "Duas Poligaláceas Novas da Bahia." *Bradea* 3(3)(1979):17–19.
- Zdero, C.; Bohlmann, F.; Robinson, H.; and King, R. M. "Neue Furanoeremophilane aus *Gynoxys dielsiana*." *Phytochemistry* 19(1980):975–76.

*Department of Entomology*

- Bueno-Soria, Joaquin, and Oliver S. Flint, Jr., "Catálogo Sistemático de los Trichópteros de México (Insecta: Trichoptera), con algunos Registros de Norte, Centro y Sudamérica." *Anales del Instituto de Biología, Universidad Nacional Autónoma de México, Serie Zoología*, vol. 49 (1980 [1978]), pp. 189–218.
- Burns, John M. "Oedipus Curtailed." *Perspectives in Biology and Medicine*, vol. 22, no. 2, part 1 (1979), page 169.
- . "Finite Wisdom." *Perspectives in Biology and Medicine*, vol. 22, no. 2, part 1 (1979), page 249.
- . "Homage to P. J. Darlington, Jr." In *Carabid Beetles: Their Evolution, Natural History, and Classification*, eds. T. L. Erwin, G. E. Ball, D. R. Whitehead, and A. L. Halpern. [facing title page] The Hague: W. Junk (1979).
- . "Gutless Wonder," "To a Lonely Hermaphrodite," and "Evolution of Auditory Ossicles." In *An Introduction to Animal Diversity: A Laboratory Manual*, by W. R. Tschinkel, P. C. Hayward, B. M. Mahoney, and B. E. Felgenhauer, pages 25, 54, and 155. Minneapolis: Burgess Publishing Co. (1980).
- . "Bone Man." *MCZ Newsletter*, 9(2)(1980):4–5.
- . "Conform." In *Selected Readings in Sociobiology*, by J. H. Hunt, page vi. New York: McGraw-Hill Book Co., 1980.
- Clarke, J. F. G. "Notes on Chilean Oecophoridae." *Journal of the Lepidoptera Society* 33(20)(1979):39–43.
- Emerson, K. C., and Roger D. Price. "Two New Species of *Bovicola* (Mallophaga: Trichodectidae)." *Journal of the Kansas Entomological Society* 52 (1979):747–50.
- Erwin, T. L. "The American Connection, Past and Present, as a Model Blending Dispersal and Vicariance in the Study of Biogeography." In *Carabid Beetles: Their Evolution, Natural History, and Classification. Proceedings of the First International Symposium of Carabidology*, eds. T. L. Erwin, G. E. Ball, D. R. Whitehead, and A. L. Halpern, pp. 355–67. The Hague: Dr. W. Junk b. v. Publishers, 1979.
- . "A Review of the Natural History and Evolution of Ectoparasitoid Relationships in Carabid Beetles." In *Carabid Beetles: Their Evolution, Natural History, and Classification. Proceedings of the First International Symposium of Carabidology*, eds. T. L. Erwin, G. E. Ball, D. R. Whitehead, and A. L. Halpern, pp. 479–84. The Hague: Dr. W. Junk b. v. Publishers, 1979.
- . "Thoughts on the Evolutionary History of Ground Beetles: Hypotheses Generated from Comparative Faunal Analyses of Lowland Forest Sites in Temperate and Tropical Regions." In *Carabid Beetles: Their Evolution, Natural History, and Classification. Proceedings of the First International Symposium of Carabidology*, eds. T. L. Erwin, G. E. Ball, D. R. Whitehead, and A. L. Halpern, pp. 539–92. The Hague: Dr. W. Junk b. v. Publishers, 1979.
- . "Systematic and Zoogeographic Notes on Apotomini, an Old World Faunal Element New to the Western Hemisphere List, with a Description of a New Species from Brazil (Coleoptera: Carabidae)." *Coleopterists Bulletin* 34(1)(1980):99–104.

- Erwin, T. L.; Ball, G. E.; Whitehead, D. R.; and Halpern, A. L. editors. *Carabid Beetles: Their Evolution, Natural History, and Classification. Proceedings of the First International Symposium of Carabidology*. The Hague: Dr. W. Junk b. v. Publishers, 1979.
- Faran, M. E. "The Importance of an Integrated Approach in Solving a Problem in Mosquito Systematics." *Mosquito Systematics* 11(1979):280-88.
- . "Mosquito Studies (Diptera: Culicidae) XXXIV. A Revision of the *Albimanus* Section of the Subgenus *Nyssorhynchus* of *Anopheles*. *Contributions of American Entomological Institute* 15(7)(1980):1-214.
- Flint, Oliver S., Jr. "Studies of Neotropical Caddisflies, XXIII: New Genera from the Chilean Region." *Proceedings of the Biological Society of Washington* 92(1979):640-49.
- Flint, Oliver S., Jr., and Bueno-Soria, Joaquin. "Studies of Neotropical Caddisflies, XXV: The Genus *Macronema* in Mesoamerica (Trichoptera: Hydropsychidae)." *Proceedings of the Entomological Society of Washington* 81(1979):522-35.
- Flint, Oliver S., Jr.; Voshell, J. Reese, Jr.; and Parker, Charles R. "The *Hydropsyche scalaris* Group in Virginia, with the Description of Two New Species (Trichoptera: Hydropsychidae)." *Proceedings of the Biological Society of Washington* 92(1979):827-62.
- Flint, Oliver S., Jr., and Wallace, J. Bruce. "Studies of Neotropical Caddisflies, XXV: The Immature Stages of *Blepharopus diaphanus* and *Leptonema columbianum* (Trichoptera: Hydropsychidae)." *Proceedings of the Biological Society of Washington* 93(1980):178-93.
- Froeschner, Richard C. "Heteroptera in an Oft-overlooked Paper of P. R. Uhler (Hemiptera)." *Proceedings of the Entomological Society of Washington* 81(4)(1980):653-56.
- . "Is *Esperanza texana* Barber (Hemiptera: Alydidae) Extending Its Range?" *Entomological News* 91(3)(1980):92.
- Gordon, Robert D., and Cartwright, O. L. "The Western Hemisphere Species of *Rhyssenus* and *Trichiorhyssenus* (Coleoptera: Scarabaeidae)." *Smithsonian Contributions to Zoology* 317. Washington, D.C.: Smithsonian Institution Press, 1980.
- Grant, Verne, and Hurd, Paul D., Jr. "Pollination of the Southwestern *Opuntias*." *Plants, Systematics, and Evolution* 133(1979):15-28.
- Grant, Verne; Grant, Karen A.; and Hurd, Paul D., Jr. "Pollination of *Opuntia lindheimeri* and Related Species." *Plants, Systematics, and Evolution* 132(1979):313-20.
- Huang, Yiau-Min. "*Aedes (Stegomyia) simpsoni* Complex in the Ethiopian Region with Lectotype Designation for *simpsoni* Theobald (Diptera: Culicidae)." *Mosquito Systematics* 11(1979):221-34.
- Huang, Yiau-Min, and Hitchcock, James C. "Medical Entomology Studies—XII. A Revision of *Aedes scutellaris* group of Tonga (Diptera: Culicidae)." *Contributions of the American Entomological Institute*, 17(3)(1980):1-107.
- Krombein, K. V. "Studies in the Tiphidae, XII. A New Genus of Methochinae with Notes on the Subgenera of *Methocha* Latreille (Hymenoptera Aculeata)." *Proceedings of the Entomological Society of Washington* 81(1979):424-34.
- . "Biosystematic Studies in the Tiphidae, XII. A New Genus of Methochinae with Notes on the Subgenera of *Methocha* Latreille (Hymenoptera Aculeata)." *Proceedings of the Entomological Society of Washington* 81(1979):465-74.
- Krombein, K. V.; Hurd, Paul D., Jr.; and Smith, D. R. *Catalog of Hymenoptera in America North of Mexico*, vol. 3, *Indexes*, pp. v-xxx and 2211-1735. Washington, D.C.: Smithsonian Institution Press, 1980.



- Masteller, E. C., and Flint, Oliver S., Jr. "Light Trap and Emergence Trap Records of Caddisflies (Trichoptera) of the Lake Erie Region of Pennsylvania and Adjacent Ohio." *Great Lakes Entomologist* 12(1979):165-77.
- Mathis, Wayne N. "*Parascatella* of Ecuador (Diptera: Ephydriidae)." *Proceedings of the Entomological Society of Washington* 81(4)(1979):602-10.
- . "Ephydrinae (Diptera: Ephydriidae): A New Perspective." In *First Symposium on Systematics and Ecology of Ephydriidae* (Diptera), ed. D. L. Deonier, pp. 47-60. The North American Benthological Society, 1979.
- . "Studies of Ephydrinae (Diptera: Ephydriidae), III: Revisions of Some Neotropical Genera and Species." *Smithsonian Contributions to Zoology* 303. Washington, D.C.: Smithsonian Institution Press, 1980.
- Mathis, Wayne N., and Steyskal, George C. "A Revision of the Genus *Oedoparena* Curran (Diptera: Dryomyzidae: Dryomyzinae)." *Proceedings of the Entomological Society of Washington* 82(3)(1980):349-59.
- Mathis, Wayne N., and Wirth, Willis W. "Beach Flies of Madagascar (Diptera: Canacidae)." *Annals of the Natal Museum* 23(3)(1979):785-96.
- Mathis, Wayne N., and Zack, Richard S. "A New Species of *Limnellia* Malloch (Diptera: Ephydriidae) from Mt. Rainier." *Entomological News* 91(3)(1980):65-67.
- Peyton, E. L.; Jayasekera, Nalin; and Chelliah, Robert V. "The Biology and Immature Stages of *Uranotaenia* (*Pseudoflicalbia*) *srilankensis* Peyton (Diptera: Culicidae)." *Mosquito Systematics* 11(1980):7-24.
- Sirivanakarn, S., and Belkin, John N. "The Identity of *Culex* (*Melanoconion*) *taeniopus* Dyar and Knab and Related Species (Diptera: Culicidae)." *Mosquito Systematics* 12(1980):7-24.
- Sirivanakarn, S., and Galindo, Pedro. "*Culex* (*Melanoconion*) *adamesi*, a New Species from Panama (Diptera: Culicidae)." *Mosquito Systematics* 12(1980):25-34.
- Sirivanakarn, S., and Heinemann, Sandra J. "Description of the Hitherto Unknown Adult and Pupa of *Culex* (*Melanoconion*) *simulator* Dyar and Knab, and Redescription of its Larva (Diptera: Culicidae)." *Mosquito Systematics* 12(1980):41-49.
- Spangler, P. J. "A New Genus of Water Beetle from Austral South America (Coleoptera: Hydrophilidae)." *Proceedings of the Biological Society of Washington* 92(4)(1979):697-718.
- . "Description of the Larva and Pupa of *Cylorygmus lineatopunctatus* (Coleoptera: Hydrophilidae: Rygodini)." *Proceedings of the Biological Society of Washington* 92(4)(1979):743-52.
- . "A New Genus of Madicolous Beetle from Ecuador (Coleoptera: Hydrophilidae: Hydrobiinae)." *Proceedings of the Biological Society of Washington* 92(4)(1979):753-61.
- . "*Hydramara argentina*, a Description of its Larva and a Report on its Distribution (Coleoptera: Hydrophilidae)." *Proceedings of the Entomological Society of Washington* 81(4)(1979):536-43.
- . "A New Species of the Riffle Beetle Genus *Portelmis* from Ecuador (Coleoptera: Elmidae)." *Proceedings of the Entomological Society of Washington* 82(1)(1980):63-68.
- . "*Onopelmus*, a New Genus of Dryopid Beetle from Peru (Coleoptera: Dryopidae)." *Proceedings of the Entomological Society of Washington* 82(2)(1980):161-65.
- . "Two New Species of the Water Beetle Genus *Hydraena* from Cuba (Coleoptera: Hydraenidae)." *Proceedings of the Entomological Society of Washington* 82(2)(1980):329-33.
- . "Chelonariid Larva, Aquatic or Not? (Coleoptera: Chelonariidae)." *Coleopterist Bulletin* 34(1)(1980):105-14.
- . "Aquatic and Semiaquatic Coleoptera." In *Aquatic Biota of Tropical*



- South America, eds. S. H. Hurlbert, G. Rodriguez, and N. D. Dos Santos. San Diego, Calif.: San Diego State University, 1980.
- . "A New Species of *Ytu* from Brazil (Coleoptera: Torridincolidae)." *Coleopterist Bulletin* 34(2)(1980):145–58.
- Traub, R. "New Genera and Subgenera of Pygiopsyllid Fleas (Siphonaptera)." In *Proceedings of the International Conference on Fleas, Ashton, England, 1977*, eds. R. Traub and H. Starcke, pp. 13–29. Rotterdam: A. A. Balkema, 1980.
- . "Some Adaptive Modifications in Fleas." In *Proceedings of the International Conference on Fleas, Ashton, England, 1977*, eds. R. Traub and H. Starcke, pp. 44–68. Rotterdam, A. A. Balkema, 1980.
- . "The Zoogeography and Evolution of Some Fleas, Lice and Mammals." In *Proceedings of the International Conference on Fleas, Ashton, England, 1977*, eds. R. Traub and H. Starcke, pp. 93–172. Rotterdam: A. A. Balkema, 1980.
- Traub, R., and Starcke, H., editors. *Proceedings of the International Conference on Fleas, Ashton, England, June 1977*. Rotterdam: A. A. Balkema, 1980.
- Traub, R.; Wisseman, C. L., Jr.; and Farhang-Azad, A. "The Ecology of Murine Typhus." In *Proceedings of the International Conference on Fleas, Ashton, England, 1977*, eds. R. Traub and H. Starcke, pp. 277–79. Rotterdam: A. A. Balkema, 1980.
- Wirth, Willis, W., and Mathis, Wayne N. "A Review of the Ephydriidae (Diptera) Living in Thermal Springs." In *First Symposium on the Systematics and Ecology of Ephydriidae (Diptera)*, ed. D. L. Deonier, pp. 21–45. The North American Benthological Society, 1979.

*Department of Invertebrate Zoology*

- Barnard, J. L. "Revision of American Species of the Marine Amphipod Genus *Paraphoxus* (Gammaridea: Phoxocephalidae)." *Proceedings of the Biological Society of Washington* 92(2)(1979):368–79.
- . "Revision of *Metharpinia* and *Microphoxus*, (Marine Phoxocephalid Amphipoda from the Americas)." *Proceedings of the Biological Society of Washington* 93(1)(1980):104–35.
- . "The Genus *Grandifoxus* (Crustacea, Amphipoda, Phoxocephalidae) from the Northeastern Pacific Ocean." *Proceedings of the Biological Society of Washington* 93(2)(1980):490–514.
- . "Arthropoda: Crustacea, Amphipoda (Amphipods)." In *Common Intertidal Invertebrates of the Gulf of California*, ed. Richard C. Brusca, pp. 214–19. Tucson, Ariz.: University of Arizona Press, 1980.
- Bayer, Frederick M. "The Correct Name of the Helioporan Octocoral *Lithotelesto micropora* Bayer & Muzik." *Proceedings of the Biological Society of Washington* 92(4)(1979):873–75.
- . "*Distichogorgia sconsa*, A New Genus and Species of Chrysogorgiid Octocoral (Coelenterata: Anthozoa) from the Blake Plateau off Northern Florida." *Proceedings of the Biological Society of Washington* 92(4)(1979):876–82.
- . "*Armadillologorgia cyathella* and *Ophidiogorgia paradoxa*, Two New Genera and Species of Primnoid Octocorals (Coelenterata: Anthozoa) from South Georgia and South Orkney Islands." *Proceedings of the Biological Society of Washington* 93(1)(1980):216–28.
- Bowman, Thomas E. "*Notodiptomus caperatus*, A New Calanoid Copepod from Phreatic Groundwater in Barbuda (Crustacea: Diaptomidae)." *Bijdragen tot die Dierkunde* 49(2)(1979):219–26.
- . "*Antromysis (Surinamysis) merista*, A New Freshwater Mysid from Venezuela (Crustacea: Mysidacea)." *Proceedings of the Biological Society of Washington* 93(1)(1980):208–15.

- Bowman, Thomas E., and Morris, Byron F. "*Carpas* Richardson 1902, A Senior Synonym of *Bagatus* Nobili 1906, and the Validity of *Carpas minutus* (Richardson 1902) (Isopoda: Asellota: Janiridae)." *Proceedings of the Biological Society of Washington* 92(3)(1979):650–57.
- Christenberry, D., and Higgins, R. P. "A New Species of *Pseudodiphascon* (Tardigrada) from Alabama." *Transactions of the American Microscopical Society* 98(4)(1979):508–14.
- Clarke, A. H. "Further Comments on the Proposed Designation of a Type Species for *Pleurocera* Rafinesque, 1818 (Z.N. (S.)183)." *Bulletin of Zoological Nomenclature* 36(3)(1979):140–41.
- . "Gastropods as Indicators of Trophic Lake Stages." *The Nautilus* 94(4)(1979):138–42.
- . "Sphaeriidae as Indicators of Trophic Lake Stages." *The Nautilus* 94(4)(1979):178–84.
- Cressey, R. F., and Cressey, H. B. "The Parasitic Copepods of Indo-West Pacific Lizard Fishes (Synodontidae)." *Smithsonian Contributions to Zoology* 296. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Parasitic Copepods of Mackerel- and Tuna-like Fishes (Scombridae) of the World." *Smithsonian Contributions to Zoology* 311. Washington, D.C.: Smithsonian Institution Press, 1980.
- DeLanney, L.; Chang, S. C.; Harshbarger, J.; and Dawe, C. J. "Mast Cell Tumors in the Caudate Amphibian, *Ambystoma mexicanum*." In *Advances in Comparative Leukemia Research*, eds. D. Yohn, B. Lapin, and J. Blakeslee, pp. 221–22. New York: Elsevier, 1980.
- Downey, Maureen E. "*Hymenaster kieri*, A New Species of Starfish of the Family Pterasteridae (Echinodermata: Asteroidea)." *Proceedings of the Biological Society of Washington* 92(4)(1979):801–3.
- Fauchald, K., and Jumars, P. A. "The Diet of Worms: A Study of Polychaete Feeding Guilds." *Oceanography and Marine Biology, An Annual Review* 19:193–284.
- Ferrari, Frank D., and Bowman, Thomas E. "Pelagic Copepods of the Family Oithonidae (Cyclopoida) from the East Coasts of Central and South America." *Smithsonian Contributions to Zoology* 312, pp. i–iii, 1–27. Washington, D.C.: Smithsonian Institution Press, 1980.
- Harshbarger, J. C.; Jacobson, E. R.; Smith, C. E.; and Couch, J. A. "Hematopoietic Neoplasms in Invertebrates and Cold-blooded Vertebrates." In *Advances in Comparative Leukemia Research*, eds. D. Yohn, B. Lapin, and J. Blakeslee, pp. 223–25. New York: Elsevier, 1980.
- Harshbarger, J. C.; Otto, S. V.; Chang, S. C. "Proliferative Disorders in *Crassostrea virginica* and *Mya arenaria* from the Chesapeake Bay and Intra-nuclear Virus-like Inclusions in *Mya arenaria* with Germinomas from a Maine Oil Spill Site." *Haliotis*, 8(1979):243–48.
- Hart, C. W., Jr. "A New Atyid Shrimp, *Palauatya dasyomma*, from Palau, Caroline Island." *Proceedings of the Biological Society of Washington* 93(2) (1980):481–89.
- . "New Freshwater Shrimp Records for Tobago, West Indies, with a Summary of Records for the Lesser Antilles (Atyidae and Palaemonidae)." *Proceedings of the Biological Society of Washington* 93(3)(1980):845–48.
- Higgins, R. P., and Fleeger, J. W. "Seasonal Changes in the Population Structure of *Echinoderes coulli* (Kinorhyncha)." *Estuarine and Coastal Marine Science* 10(1980):495–505.
- Hobbs, Horton H., Jr. "A New Crayfish from the Ouachita River Basin in Arkansas (Decapoda: Cambaridae)." *Proceedings of the Biological Society of Washington* 92(4)(1979):804–11.
- . "*Atya gabonensis* (Decapoda, Atyidae) in the Western Hemisphere." In *Crustaceana* 38(pt. 1)(1980):111.



- . "New Dwarf Crayfishes (Decapoda: Cambaridae) from Mexico and Florida." *Proceedings of the Biological Society of Washington* 92(1)(1980): 194–207.
- Hobbs, Horton, H., Jr., and Peters, Daniel J. "A Substitute Name for the Homonym *Aphelocythere* Hobbs and Peters (Ostracoda, Entocytheridae)." *Proceedings of the Biological Society of Washington* 91(4)(1979):1037.
- Houbrick, R. S. "Reproductive Biology of *Modulus modulus* Linnaeus, 1758 (Prosobranchia: Cerithiacea)." *Bulletin of the American Malacological Union, Inc.*, p. 10, 1979.
- . "Review of the Deep-Sea Genus *Argyropeza* (Gastropoda: Prosobranchia: Cerithiidae)." *Smithsonian Contributions to Zoology* 321. Washington, D.C.: Smithsonian Institution Press, 1980.
- . "Observations on the Anatomy and Life History of *Modulus modulus* (Linnaeus) [Prosobranchia: Gastropoda]." *Malacologia*, 19(1)(1980):117–42.
- Kenk, Roman. "Freshwater Triclad (Turbellaria) of North America. XI. *Phagocata holleri*, New Species, from a Cave in North Carolina." *Proceedings of the Biological Society of Washington* 92(1979):389–93.
- . "Freshwater Triclad (Turbellaria) of North America. XII. Another New Cave Planarian from North Carolina." *Brimleyana*, 2(1979):91–96.
- Kensley, Brian. "Redescription of *Haliophasma barnardi* (Monod) from West Africa (Crustacea: Isopoda: Anthuridae)." *Proceedings of the Biological Society of Washington* 92(1979):658–64.
- . "Redescription of *Zonophryxus trilobus* Richardson, with Notes on the Male and Developmental Stages (Crustacea: Isopoda: Dajidae)." *Proceedings of the Biological Society of Washington* 92(1979):665–70.
- . "New Species of Anthurideans from the Cook and Fiji Islands (Crustacea: Isopoda: Anthuridea)." *Proceedings of the Biological Society of Washington* 92(1979):814–36.
- . "A New Species of *Munna* Krøyer from Nigeria (Crustacea: Isopoda: Munnidae)." *Proceedings of the Biological Society of Washington* 93(1980): 136–40.
- . "Anthuridean Isopod Crustaceans from the International Indian Ocean Expedition, 1960–1965, in the Smithsonian Collections." *Smithsonian Contributions to Zoology* 304. Washington, D.C.: Smithsonian Institution Press, 1980.
- . "The Constitution of the Fauna of Rocky Intertidal Shores of South West Africa. Part III. The North Coast from False Cape Frio to the Kunene River." *Cimbebasia*, ser. A., vol. 5, pp. 201–14, 1980.
- Kornicker, Louis S. "The Marine Fauna of New Zealand: Benthic Ostracoda (Suborder Myodocopina)." *New Zealand Oceanographic Institute Memoir* 82, 1979.
- . "Ostracoda." In *The Encyclopedia of Paleontology*, edited by R. W. Fairbridge and D. Jablonski, pp. 499–504. Penn.: Dowden, Hutchinson & Ross, Inc., 1979.
- Kornicker, Louis S., and Caraion, Francisca Elena "Nealella, a New Genus of Myodocopid Ostracoda (Sarsiellidae: Dantyninae)." *Smithsonian Contributions to Zoology* 309. Washington, D.C.: Smithsonian Institution Press, 1980.
- Lewinsohn, Ch., and Manning, Raymond B. "Stomatopod Crustacea from the Eastern Mediterranean." *Smithsonian Contributions to Zoology* 305. Washington, D.C.: Smithsonian Institution Press, 1980.
- Manning, Raymond B. "The Superfamilies, Families and Genera of Recent Stomatopod Crustacea, with Diagnoses of Six New Families." *Proceedings of the Biological Society of Washington* 93(2)(1980):362–72.
- . "*Pullosquilla thomassini* Manning 1978 New to the Red Sea (Crustacea: Stomatopoda)." *Senckenbergiana biologica* 60(3/4)(1980):269–70.



- Manning, Raymond B., and Blow, Warren C. "Henry B. Roberts 1 September 1910–14 March 1979." *Crustaceana* 39(1)(1980):104–7.
- Manning, Raymond B., and Froggia, C. "Description of a New *Allosquilla* with Notes on Other Adriatic Stomatopod Crustacea." *Quaderni del Laboratorio di Tecnologia della Pesca* 2(4)(1979):177–90.
- Otto, S. V.; Harshbarger, J. C.; Chang, S. C. "Status of Selected Unicellular Eucaryote Pathogens, and Prevalence and Histopathology of Inclusions Containing Obligate Procaryote Parasites, in Commercial Bivalve Mollusks from Maryland Estuaries." *Haliotis* 8(1979):285–95.
- Pawson, David L. "Sea Urchins." *Bermuda Biological Station Newsletter* 8(3)(1979):2.
- Pawson, David L., and Caycedo, I. E. "Holothuria (*Thymiosycia*) *thomasi* New Species, a Large Caribbean Coral Reef Inhabiting Sea Cucumber (Echinodermata: Holothuroidea)." *Bulletin of Marine Science* 30(2)(1980):454–59.
- Pawson, David L., and Miller, J. E. "Secondary Sex Characters in *Coelopleurus floridanus* A. Agassiz 1872 (Echinodermata: Echinoidea)." *Bulletin of Marine Science* 29(4)(1979):581–86.
- Pawson, David L., and Phelan, T. F. "*Clypeaster kieri*, a New Species of Clypeasteroid (Echinodermata: Echinoidea) from off Bombay, India." *Proceedings of the Biological Society of Washington* 92(4)(1979):796–800.
- Rehder, H. A. "Note on Cernohorsky's Application for the Use of the Plenary Powers to Designate a Type Species for the Genus *Drupella* Thiele, 1925." *Bulletin of Zoological Nomenclature* 37(pt. 2)(1980):86–87.
- . "The Marine Mollusks of Easter Island (Isla de Pascua) and Sala y Gomez." *Smithsonian Contributions to Zoology* 289. Washington, D.C.: Smithsonian Institution Press, 1980.
- Reish, Donald J., and Barnard, J. L. "Amphipods (Arthropoda: Crustacea: Amphipoda)." In *Pollution Ecology of Estuarine Invertebrates*, ed. C. W. Hart, Jr., pp. 345–70. New York: Academic Press, 1979.
- Rice, Mary E. "Sipuncula and Echiura." In *Intertidal Invertebrates of California Coast*, eds. R. H. Morris, D. P. Abbott, and B. C. Haderlie. Stanford, Calif.: Stanford University Press, 1980.
- Rosewater, J. "Predator Boreholes in *Periploma margaritacea* with a Brief Survey of Other Periplomatidae (Bivalvia: Anomalodesmata)." *The Veliger* 22(3)(1980):248–51.
- . "A Close Look at *Littorina radulae*." *Bulletin of the American Malacological Union for 1979*, pp. 5–8, 1980.
- Rosewater, J.; Morrison, J. P. E.; Clarke, A. H.; Stein, C. B.; and Davis, G. M. "Further Comments on the Proposed Designation of a Type Species for *Pleurocera* Rafinesque, 1818.Z.N.(S)83." *Bulletin of Zoological Nomenclature* 36(pt. 3)(1979):139–46.
- Rosewater, J., and Ponder, W. F. "Rectifications in the Nomenclature of Some Indo-Pacific Littorinidae." *Proceedings of the Biological Society of Washington* 92(4)(1979):773–82.
- Rüetzel, K.; Ferraris, J. D.; and Larson, R. J. "A New Plankton Sampler for Coral Reefs." *Marine Ecology* 1(1980):81–87.
- Sindermann, C. J.; Bang, F. E.; Christensen, N. O.; Dethlefsen, V.; Harshbarger, J. C.; Mitchell, J. R.; and Mulcahy, M. F. "The Role and Value of Pathobiology in Pollution Effects Monitoring Programs." *Reports et Procès-Verbaux des Reunion Conseil International pour l'Exploration de la Mer* 179(1980):135–51.
- Sohn, I. G., and Kornicker, Louis S. "Viability of Freeze-Dried Eggs of the Freshwater Heterocypris *Incongruens*." In *Proceedings of the Seventh International Symposium on Ostracodes, Taxonomy, Biostratigraphy and Distribution of Ostracodes*, pp. 1–4. Belgrad, Yug.: Serbian Geological Society, 1979.

Department of Mineral Sciences

- Agosto, W. N.; Hewins, R. H.; and Clarke, R. S., Jr. "Allan Hills A77219, The First Antarctic Mesosiderite." *Eleventh Lunar and Planetary Science Conference Abstracts*, pp. 1-3, 1980.
- Beauchamp, R., and Fredriksson, K. "Ivuna and Orgueil C-1 Chondrites: A New Look." *Meteoritics* 14(1979):344.
- Cerny, P.; Hawthorne, F. C.; and Jarosewich, E. "Crystal Chemistry of Milairite." *The Canadian Mineralogist* 18(1980):41-57.
- Clarke, R. S., Jr. [Abstract] "Cohenite Growth in Iron Meteorites." *Meteoritics* 14(1979):367-68.
- Clarke, R. S., Jr., and Scott, E. R. D. "Tetrataenite-Ordered FeNi, a New Mineral in Meteorites." *The American Mineralogist* 65(1980):624-30.
- Desautels, Paul E. *Gemstones*. Encyclopedia Britannica Yearbook (Industrial Review), 1979.
- . *Treasures of the Smithsonian: The Gem Collection*. Washington, D.C.: Smithsonian Institution Press, [new edition] 1980.
- Dodd, R. T., and Jarosewich, E. "Chemical Variation among L-group Chondrites 1. The Apt and Tourinnes-la-gross (L-6) Chondrites." *Meteoritics* 15 (1980):69-83.
- Dodd, R. T., and Jarosewich, E. "Incipient Melting and Shock Classification of L-group Chondrites." *Earth and Planetary Sciences Letters* 44(1979):335-40.
- Dunn, Pete J. "Carbonate-fluorapatite from near Fairfield, Utah." *The Mineralogical Record* 11(1980):33-34.
- . "Contributions to the Mineralogy of Franklin and Sterling Hill, New Jersey." *The Mineralogical Record* 10(1979):160-65.
- . "On the Validity of Calderite." *The Canadian Mineralogist* 17(1979): 569-71.
- . "The Chemical Composition of Gageite: An Empirical Formula." *The American Mineralogist* 64(1979):1056-58.
- Dunn, Pete J.; Keller, P.; and Hess, H. "Die Ladungsbilanz für eine vergemeinerte Kristallstruktur von Stranskitt,  $Zn_2Cu(AsO_4)_2$ ." *Tschermaks Min. Petr. Mitt.* 26(1979):167-74.
- Dunn, Pete J.; Leavens, P. B.; and Barnes, C. "Magnesioaxinite from Luning, Nevada, and Some Nomenclature Designations for the Axinite Group." *The Mineralogical Record* 11(1980):13-15.
- Dunn, Pete J.; Leavens, P. B.; Sturman, B. D.; Gaines, R. V.; and Barbosa, C. D. P. "Hureaulite and Barbosalite from Lavra do Criminoso, Minas Gerais, Brazil." *The Mineralogical Record* 10(1979):147-51.
- Dunn, Pete J.; Peacor, D.; and Sturman, B. D. "Kolicite, A New Manganese Zinc Silicate Arsenate from Sterling Hill, Ogdensburg, New Jersey." *The American Mineralogist* 64(1979):708-12.
- Dunn, Pete J.; Peacor, D. R.; and Sturman, B. D. "Lawsonbauerite, A New Mineral from the Sterling Hill Mine, New Jersey, and New Data for Torreyite." *The American Mineralogist* 64(1979):949-52.
- Dunn, Pete J.; Peacor, D. R.; White, J. S.; and Ramik, R. A. "Kingsmountite, A New Mineral Isostructural with Montgomeryite." *The Canadian Mineralogist* 17(1979):579-82.
- El Goresy, A.; Nagel, K.; Dominik, B.; Ramdohr, P.; and Mason, Brian. "Rubber-bearing Phosphate-Molybdates and other Oxidized Phases in Fremdlinge in Allende Inclusions." *Meteoritics* 14(1979):390-91.
- Fleischer, M. *Glossary of Mineral Species*, 1980. Bowie, Maryland: Mineralogical Record, Inc. 1980.
- Fredriksson, K.; Brenner, P.; Dube, A.; Milton, D.; Mooring, C.; and Nelen, J. "Petrology, Mineralogy, and Distribution of Lonar (India) and Lunar Impact Breccias and Glasses." *Smithsonian Contributions to the Earth Sciences* 22. Washington, D.C.: Smithsonian Institution Press, 1979.
- Fredriksson, K.; Noonan, A.; Jarosewich, E.; Nelen, J.; Darsoprajitno, S.; and



- Padmanagara, S. "Banten, A New C2 Chondrite: Evidence for Impacts on a Wet Regolith." *Meteoritics* 14(1979):400–401.
- Fredriksson, K., and Wlotzka, F. Krähenberg—ein Schatz aus dem Weltraum in Historischen Museum der Pfalz zu Speyer. *Pfälzer Heimat* Nr. 4(1979): 121–24.
- Fudali, Robert F., and Ford, R. J. "Darwin Glass and Darwin Crater: A Progress Report." *Meteoritics* 14(3)(1979):283–96.
- Jarosewich, E.; Nelen, J.; and Norberg, J. "Electron Microprobe Reference Samples for Mineral Analyses." *Smithsonian Contributions to the Earth Sciences* 22, pp. 68–72. Washington, D.C.: Smithsonian Institution Press, 1979.
- Jarosewich, E.; Nelen, J.; and Norberg, J. "Reference Samples for Electron Microprobe Analysis." *Geostandards Newsletter* 4(1980):43–47.
- Jarosewich, E.; Parkes, A.; and Wiggins, L. "Microprobe Analyses of Four Natural Glasses and One Mineral: An Interlaboratory Study of Precision and Accuracy." *Smithsonian Contributions to the Earth Sciences* 22, pp. 53–67. Washington, D.C.: Smithsonian Institution Press, 1979.
- Jezek, P.; Sinton, J.; Jarosewich, E.; and Obermeyer, C. "Fusion of Rock and Mineral Powders for Electron Microanalysis." *Smithsonian Contributions to the Earth Sciences* 22, pp. 46–52. Washington, D.C.: Smithsonian Institution Press, 1979.
- Johnson, P. H.; Score, R. A.; Schwarz, C. M.; and Mason, Brian. "Display of Some Unusual Meteorites from Antarctica." *Lunar and Planetary Science*, 11(1980):513.
- Kearns, L. E.; Kite, L. E.; Leavens, P. B.; and Nelen, J. "Fluorine Distribution in the Hydrous Silicate Minerals of the Franklin Marble, Orange County, New York." *The American Mineralogist* 65(1980):557–62.
- Keller, P.; Hess, H.; and Dunn, Pete J. "Queitite,  $\text{Pb}_3\text{Zn}_2\text{SO}_4 \cdot \text{SiO}_4 \cdot \text{Si}_2\text{O}_7$ , A New Mineral from Tsumeb, South West Africa." *Neues Jahrbuch Min. Monat.* (1979):203–9.
- . "Warikhanite,  $\text{Zn}_3[(\text{H}_2\text{O})_2(\text{AsO}_4)_2]$  A New Mineral from Tsumeb, South West Africa." *Neues Jahrbuch Min. Monat.* (1979):389–95.
- Keller, P.; Hess, H.; Süsse, P.; Dunn, Pete J.; and Schnorrer, G. "Koritnigite,  $\text{Zn H}_2\text{O} \cdot \text{HOAsO}_3$ , ein neues Mineral aus Tsumeb, Sudwestafrika." *Tschermaks Min. Petr. Mitt.* 26(1979):51–58.
- King, T. V. V.; Score, R. A.; and Mason, Brian. "An Overview of the 1977–78 Antarctic Meteorite Collection and a Sneak Preview of the 1978–79 Achondrites." *Meteoritics* 14(1979):443–44.
- Marvin, Ursula B., and Mason, Brian, editors. *Catalog of Antarctic Meteorites, 1977–1978. Smithsonian Contributions to the Earth Sciences* 23. Washington, D.C.: Smithsonian Institution Press, 1980.
- Mason, Brian. "Chemical Variation Among Australian Tektites." *Smithsonian Contributions to the Earth Sciences* 22, pp. 14–26. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Descriptions of Antarctic Meteorites." *Antarctic Meteorite Newsletter* 2(3), 3(1 and 2) (1979–1980).
- Mason, Brian; Jarosewich, E.; and Nelen, J. "The Pyroxene-Plagioclase Achondrites." *Smithsonian Contributions to the Earth Sciences* 22, pp. 27–45. Washington, D.C.: Smithsonian Institution Press, 1979.
- Nakai, Izumi, and Appleman, Daniel E. "Klebelbergite  $\text{Sb}_4\text{O}_4(\text{OH})_2\text{SO}_4$ : A New Definition and Synthesis." *The American Mineralogist* 65(1980):499–505.
- Scott, E. R. D., and Clarke, R. S., Jr. "Identification of Clear Taenite in Meteorites as Ordered FeNi." *Annual Report, Department of Terrestrial Magnetism, Carnegie Institution 1978–1979*, pp. 409–13, 1979.
- . "Identification of Clear Taenite in Meteorites as Ordered FeNi." *Nature*, 28(1979):360–62.



- Walenta, K., and Dunn, Pete J. "Ferridravite, A New Member of the Tourmaline Group from the San Francisco Mine, Near Villa Tunari, Bolivia." *The American Mineralogist* 64(1979):945-48.
- Weinke, H. H.; Kiesl, W.; and Clarke, R. S., Jr. [Abstract] "Mineralogical and Chemical Investigation of the Waterville Iron Meteorite." *Meteoritics*, 14 (1979):561-64.
- White, J. S. "Boehmite Exsolution in Corundum." *The American Mineralogist* 64(1979):1300-1302.
- . "Lorettoite Discredited and Chubutite Reviewed." *The American Mineralogist* 64(1979):1303-1305.
- . "Sulfur in Pyrite Crystal-shaped Cavities in Quartz." *The Mineralogical Record* 11(1980):99-100.
- . "Minerals and Rocks." Film produced by Encyclopedia Britannica and the American Geological Institute, 1980.
- Wlotzka, F.; Palme, H.; Spettel, B.; Wanke, H.; Fredriksson, K.; and Noonan, A. "Krähenberg and Bhola: LL-Chondrites with Differentiated K-rich Inclusions." *Meteoritics* 14(1979):566.

*Department of Paleobiology*

- Adey, W. H. "Crustose Coralline Algae as Microenvironmental Indicators for the Tertiary." In *Historical Biogeography, Plate Tectonics, and the Changing Environment*, eds. J. Gray and A. J. Boucot, pp. 459-64. Corvallis, Ore.: Oregon State University Press, 1979.
- Adey, W. H.; Rogers, C. S.; and Steneck, R. S. [Integrated progress report] *The South St. Croix Reef: A Study of Reef Metabolism as Related to Environmental Factors and an Assessment of Environmental Management*, submitted to the Virgin Islands Government, 95 pages. Charlotte Amalie, Virgin Islands: Marine Systems Laboratory, 1979.
- Benson, R. H. "In Search of Lost Oceans: A Paradox in Discovery." In *Historical Biogeography, Plate Tectonics, and the Changing Environment*, eds. J. Gray and A. J. Boucot, pp. 379-88. Corvallis, Ore.: Oregon State University Press, 1979.
- Boardman, R. S., and Cheetham, A. H. [225 bryozoan terms] In *Glossary of Geology*, eds. R. L. Bates and J. A. Jackson. Falls Church, Va.: American Geological Institute, 1980.
- Buzas, M. A., and Carle, K. J. "Predators of Foraminifera in the Indian River, Florida." *Journal of Foraminiferal Research* 9(4)(1979):336-40.
- Buzas, M. A., and Culver, S. J. "Foraminifera: Distribution of Provinces in the Western North Atlantic." *Science* 209(4457)(1980):687-89.
- Cheetham, A. C.; Hayek, L. C.; and Thomsen, Erik. "Branching Structure in Arborescent Animals: Models of Relative Growth." *Journal of Theoretical Biology* 85(2)(1980):335-69.
- Cifelli, Richard. "The Role of Circulation in the Parcelling and Dispersal of North Atlantic Planktonic Foraminifera." In *Historical Biogeography, Plate Tectonics, and the Changing Environment*, eds. J. Gray and A. J. Boucot, pp. 417-25. Corvallis, Ore.: Oregon State University Press, 1979.
- Cifelli, Richard, and Glaçon, Georgette. "New Late Miocene and Pliocene Occurrences of *Globorotalia* Species from the North Atlantic; and a Paleogeographic Review." *Journal of Foraminiferal Research* 9(3)(1979):210-27.
- Culver, S. J. and Buzas, M. A. "Distribution of Recent Benthic Foraminifera off the North American Atlantic Coast." *Smithsonian Contributions to the Marine Sciences* 6. Washington, D.C.: Smithsonian Institution Press, 1980.
- Emry, R. J. [Book Review] "Evolution of African Mammals," eds. V. J. Maglio and H. B. S. Cooke. *Journal of Paleontology* 54(1)(1980):267-70.
- Grant, R. E. "The Human Face of the Brachiopod." *Journal of Paleontology* 54(3)(1980):499-507.

- Hickey, L. J. "Paleobotany." *Geotimes* 25(2)(1980):39-40.
- . "Paleocene Stratigraphy and Flora of the Clarks Fork Basin. In *Early Cenozoic Paleontology and Stratigraphy of the Bighorn Basin, Wyoming: 1880-1980*, ed. P. D. Gingerich, 33-49. *University of Michigan Papers in Paleontology* 24 (1980).
- Hotton, Nicholas, III. [Book Review] *The Order Microsauria*, by R. L. Carroll and Pamela Gaskill. *Journal of Paleontology* 54(1)(1980):267.
- . "An Alternative to Dinosaur Endothermy: The Happy Wanderers." In *A Cold Look at the Warm Blooded Dinosaurs. AAAS Selected Symposium* 28, eds. R. D. K. Thomas and E. C. Olson, pp. 311-50. Boulder, Colo.: Westview Press, Inc., 1980.
- Hueber, F. M., and Banks, H. P. "*Serrulacaulis furcatus* gen. et. sp. nov., A New Zosterophyll from the lower Upper Devonian of New York State." *Review of Paleobotany and Palynology* 28(2)(1979):169-89.
- Kier, P. M. "The Echinoids of the Middle Eocene Warley Hill Formation, Santee Limestone, and Castle Hayne Limestone of North and South Carolina." *Smithsonian Contributions to Paleobiology* 39. Washington, D.C.: Smithsonian Institution Press, 1980.
- Ray, C. E. "*Chelonia couperi* Harlan, 1842, a Supposed Turtle Based on the Clavicle of a Megathere (Mammalia: Edentata)." *Notulae Naturae*, 455 (1979):1-16.
- Repenning, C. A.; Ray, C. E.; and Grigorescu, Dan. "Pinniped Biogeography." In *Historical Biogeography, Plate Tectonics, and the Changing Environment*, eds. J. Gray and A. J. Boucot, pp. 357-69. Corvallis, Ore.: Oregon State University Press, 1979.
- Stanley, D. J. "Maltese Front and Strait of Sicily Ocean Pattern Analysis." In *Apollo-Soyuz Project, Summary Science Report*, eds. Farouk El-Baz and D. M. Warner, pp. 431-40. Washington, D.C.: National Aeronautics and Space Administration, 1979.
- . "Submarine Canyon Wall Sedimentation and Lateral Infill: Some Ancient Examples." *Smithsonian Contributions to the Marine Sciences* 4. Washington, D.C.: Smithsonian Institution Press, 1980.
- . "The Saint-Antonin Conglomerate in the Maritime Alps: A Model for Coarse Sedimentation on a Submarine Slope." *Smithsonian Contributions to the Marine Sciences* 5. Washington, D.C.: Smithsonian Institution Press, 1980.
- Stanley, D. J., and Blanpied, Christian. "Late Quaternary Water Exchange between the Eastern Mediterranean and the Black Sea." *Nature* 285(5766) (1980):537-41.
- Stanley, D. J.; Rehault, J. P.; and Stuckenrath, Robert. "Turbid-Layer Bypassing Model: The Corsican Trough, Northwestern Mediterranean." *Marine Geology* 37(1-2)(1980):19-40.
- Videtich, P. E., and Macintyre, I. G. [Abstract] "Stable Isotopic Analysis of Serpulids from a Submarine Cave, Belize Barrier Platform." *Geological Society of America Abstracts with Programs* 11(1)(1979):57.
- Waller, T. R. [Abstract] "Formation of a Posterodorsal Notch in Larval Oyster Shells and the Prodissoconch—I/II Boundary in the Bivalvia." *Bulletin of the American Malacological Union for 1978*, pp. 55-56, (1979).
- . "Scanning Electron Microscopy of Shell and Mantle in the Order Arcoida (Mollusca: Bivalvia)." *Smithsonian Contributions to Zoology* 313. Washington, D.C.: Smithsonian Institution Press, 1980.

*Department of Vertebrate Zoology*

- Böhlke, James E.; Weitzman, Stanley H.; and Menezes, Naercio A. "Estado Atual da Sistemática dos Peixes de Água Doce da América do Sul." *Acta Amazonica* 8(4)(1979):657-77.



- Carleton, Michael D. "Taxonomic Status and Relationships of *Peromyscus boylii* from El Salvador." *Journal of Mammalogy* 60(1979):280-96.
- . "Phylogenetic Relationships in Neotomine-Peromyscine Rodents (Murroidea) and a Reappraisal of the Dichotomy within New World Cricetinae." *Dissertation Abstracts International* 40(10)(1980).
- Carleton, Michael D., and Eshelman, R. E. "A Synopsis of Fossil Grasshopper Mice, Genus *Onychomys*, and Their Relationships to Recent Species." *Papers on Paleontology, University of Michigan Museum of Paleontology* 21(1979):1-63..
- Carleton, Michael D., and Myers, P. "Karyotypes of Some Harvest Mice, Genus *Reithrodontomys*." *Journal of Mammalogy* 60(1979):307-13.
- George, A., and Springer, V. G. "Revision of the Clinid Fish Tribe Ophiclinini, Including Five New Species, and Definition of the Family Clinidae." *Smithsonian Contributions to Zoology* 307. Washington, D.C.: Smithsonian Institution Press, 1980.
- Handley, C. O., Jr. "Mammals of the Dismal Swamp: A Historical Account." In *The Great Dismal Swamp*, ed. P. W. Kirk, Jr., pp. 297-357. Charlottesville, Va.: University Press of Virginia, 1979.
- . "Status [of the mountain lion] in Virginia." *Eastern Cougar Newsletter* 2(1979):4-5.
- . "Avocet in West Virginia." *Redstart* 46(4)(1979):148.
- . "Marine Mammals in Michigan Pleistocene Beaches." Reprinted from *Journal of Mammalogy* 34(1953):252-53, by Pursuit (Journal of the Society of Investigation Unexplained) 12(1979):195-96.
- Handley, C. O., Jr., and Gordon, L. K. "New Species of Mammals from Northern South America. Mouse Possums, genus *Marmosa* Gray." In *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 65-72. Washington, D.C.: Smithsonian Institution Press, 1979.
- Handley, C. O., Jr. "Inconsistencies in Formation of Family-group and Subfamily-group Names in Chiroptera." In: *Proceedings of the Fifth International Bat Research Conference*, eds. D. E. Wilson and A. L. Gardner, pp. 9-13. Lubbock, Tex.: Texas Tech University Press, 1980.
- Heyer, W. R. "Annual Variation in Larval Amphibian Populations within a Temperate Pond." *Journal of the Washington Academy of Sciences* 69(2) (1979):65-74.
- . "Systematics of the *pentadactylus* Species Group of the Frog Genus *Leptodactylus* (Amphibia: Leptodactylidae)." *Smithsonian Contributions to Zoology* 301. Washington, D.C.: Smithsonian Institution Press, 1979.
- Irvine, Blair A.; Scott, Michael D.; Wells, Randy S.; and Mead, James G. "The Stranding of the Pilot Whale, *Globicephala melaena*, in Florida and South Carolina." *Fishery Bulletin* 77(2)(1979):511-13.
- Lachner, Ernest A., and McKinney, James F. "Two New Gobiid Fishes of the Genus *Gobiopsis* and a Redescription of *Feia nympha* Smith." *Smithsonian Contributions to Zoology* 299. Washington, D.C.: Smithsonian Institution Press, 1979.
- Menzies, J., and Zug, G. R. "Papuan Tree Frogs of the *Litoria thesaurensis* Group (Salientia: Hylidae)." *Micronesica* 15(1-2)(1979):325-33.
- Olson, Storrs L. "Picathartes—Another West African Forest Relict with Probable Asian Affinities." *Bulletin of the British Ornithologists' Club* 99(3) (1979):112-13.
- . "The Significance of the Distribution of the Megapodiidae." *Emu* 80 (1)(1980):21-24.
- . "*Lamprolia* as Part of a South Pacific Radiation of Monarchine Flycatchers." *Notornis* 27(1)(1980):6-10.
- . "Revision of the Tawny-Faced Antwren, *Microbates cinereiventris*



- (Aves: Passeriformes)." *Proceedings of the Biological Society of Washington* 93(1)(1980):68–74.
- . "Geographic Variation in the Yellow Warblers (*Dendroica petechia*: Parulidae) of the Pacific Coast of Middle and South America." *Proceedings of the Biological Society of Washington* 93(2)(1980):473–480.
- . "A. New Genus of Penguin-Like Pelecaniform Bird from the Oligocene of Washington (Pelecaniformes, Plotopteridae)." *Natural History Museum of Los Angeles County Contributions in Science* 330(1980):51–57.
- Olson, Storrs., and Feduccia, Alan. "Relationships and Evolution of Flamingos (Aves: Phoenicopteridae)." *Smithsonian Contributions to Zoology* 316. Washington, D.C.: Smithsonian Institution Press, 1980.
- . "Presbyornis and the Origin of the Anseriformes (Aves: Charadriomorphae)." *Smithsonian Contributions to Zoology* 323. Washington, D.C.: Smithsonian Institution Press, 1980.
- Olson, Storrs L., and Feduccia, Alan. "An Old World Occurrence of the Eocene Avian Family Primobucconidae." *Proceedings of the Biological Society of Washington* 92(3)(1979):494–97.
- Olson, Storrs L., and Hasegawa, Yoshikazu. "Fossil Counterparts of Giant Penguins from the North Pacific." *Science* 206(4419)(1979):688–89.
- Olson, Storrs, L.; Swift, Camm C.; and Mokhiber, Carmine. "An Attempt to Determine the Prey of the Great Auk." *Auk* 96(4)(1979):790–92.
- Ripley, S. D. "Changes in the Bird Fauna of a Forest Area; Simlipal Hills, Mayurbhanj District, and Dhenkanal District, Orissa." *Journal of the Bombay Natural History Society* 75(3)(1978):570–74.
- . "Scientists Find that Many Seabird Species Are, Like Porpoises, Subject to Inadvertent Destruction by Commercial Fishermen." *Environmental Awareness* 1(3)(1978):99–100.
- . *A Naturalist's Adventure in Nepal*. Katmandu: Ratna Pustak Bhandar, 1978. [Revised edition of *Search for the Spiny Babbler*. London: Gollancz, 1953.]
- . "The Smithsonian: An Interdisciplinary Institution 150 Years after Its Conception by James Smithson." *Interdisciplinary Science Reviews* 3(2)(1978):89–98.
- . "A Comment on *Actinodura nipalensis* (and *waldeni*)." *Journal of the Bombay Natural History Society* 76(1)(1979):21–23.
- . "International Aspects of Bird Conservation." *The Garden Clubs of America, Bulletin* 67(8)(Summer, 1979).
- . "A Semi-Albino Snow Goose." *Aviculture Magazine* 85(1)(1979):4–5.
- . "The Ebb and Flow of Species." In *The American Land*. Washington, D.C.: Smithsonian Exposition Books, 1979.
- . [Foreword] *Other Edens*, by John Henry Dick. Old Greenwich: Devin-Adair, 1979.
- . "Love for Nature." In *Liber Amicorum: Walter van den bergh*. Amsterdam: Lannoo-Tielt, 1980.
- Ripley, S. D., and Bond, G. M. "A Third Set of Additions to the Avifauna of Angola." *Bulletin of the British Ornithologists' Club* 99(4)(1979):140–42.
- Ripley, S. D., and Lovejoy, T. E. "Threatened and Endangered Species." *Habitat* 7(4)(1979):21–28.
- Slud, Paul. "The Birds of Hacienda Palo Verde, Guanacaste, Costa Rica." *Smithsonian Contributions to Zoology* 292. Washington, D.C.: Smithsonian Institution Press, 1980.
- Steadman, David W.; Olson, Storrs L.; Barber, John C.; Meister, Charles A.; and Melville, Margaret E. "Weights of Some West Indian Birds." *Bulletin of the British Ornithologists' Club* 100(2)(1980):155–58.
- Thorington, Richard W., Jr.; Rudran, R.; and Mack, R. "Sexual Dimorphism of *Alouatta seniculus* and Observations on Capture Techniques. In *Verte-*

- brate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 97–106. Washington, D.C.: Smithsonian Institution Press, 1979.
- Vari, Richard. "Anatomy, Relationships and Classification of the Families Citharinidae and Distichodontidae (Pisces: Characoidea)." *Bulletin British Museum (NH)* 36(5)(1979):261–344.
- Vari, Richard, and Gery, Jacques. "*Cheirodon ortegai*, A New Markedly Sexually Dimorphic Cheirodontine (Pisces: Characoidea) from the Rio Ucayali of Peru." *Proceedings of the Biological Society of Washington* 93(1)(1980): 75–82.
- Zug, George R. "The Endoskeleton; The Comparative Anatomy of the Girdles, the Sternum, and the Paired Appendages." In *Comparative Vertebrate Anatomy*, ed. M. Wake, pp. 238–64. Chicago: University of Chicago Press, 1979.
- Zug, George R.; Hedges, S. Blair; and Sunkel, Sara. "Variation in the Reproductive Parameters of Three Neotropical Snakes, *Coniophanes fissidens*, *Dipsas catesbyi*, and *Imantodes cenchoa*." *Smithsonian Contributions to Zoology* 300. Washington, D.C.: Smithsonian Institution Press.
- Zusi, Richard L. Consultant for "Taxonomy." In *Nomina Anatomica Avium*, eds. J. J. Baumel, A. S. King, A. M. Lucas, J. E. Breazile, and H. E. Evans. London: Academic Press, 1979.
- . Penguin. In *The Academic American Encyclopedia*, Vol. 15, p. 143, 1980.

#### *Smithsonian Oceanographic Sorting Center*

- Ferrari, F., and Bowman, T. "Pelagic Copepods of the Family Oithonidae (Cyclopoida) from the East Coasts of Central and South America." *Smithsonian Contributions to Zoology* 312. Washington, D.C.: Smithsonian Institution Press, 1980.
- Hendler, G. "Sex-reversal and Viviparity in *Ophiolepis kieri*, n. sp., with Notes on Viviparous Brittlestars from the Caribbean (Echinodermata: Ophiuroidea)." *Proceedings of the Biological Society of Washington* 92(4) (1979): 783–95.
- Knapp, L. "Fishche des Indischen Ozeans." *Ergebnisse der ichthyologischen Untersuchungen während der Expedition des Forschungsschiffes "Meteor" in den Indischen Ozean, Oktober 1964 bis 1965. A. Systematischer Teil, XXII. Scorpaneiformes (4), Families Platycephalidae and Bembridae. Meteor Forsch. -Ergebnisse, Reihe D, 29(1979):48–54, Berlin-Stuttgart.*

#### *Handbook of North American Indians*

- Ortiz, Alfonso, editor. *Southwest*. In *Handbook of North American Indians*, vol. 9. William C. Sturtevant, gen. ed. Washington, D.C.: Smithsonian Institution, 1980.

#### NATIONAL ZOOLOGICAL PARK

- August, P. V. "Distress Calls in (*Artibeus jamaicensis*): Ecology and Evolutionary Implications." *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 151–60. Washington, D.C.: Smithsonian Institution Press, 1979.
- Blakeslee, C. K.; Rice, C. G.; and Ralls, K. "Behavior and Reproduction of Captive Brow-Antlered Deer (*Cervus eldi thamin*) (Thomas, 1918)." *Saugetierkundliche Mitteilungen* 27(1979):114–27.
- Bond, M. "Second Generation Captive Birth of an Orang-utan (*Pongo pygmaeus*)." *International Zoo Yearbook* 19(1979):165–67.
- Boness, D. J. "Busy As a Beaver Valley." *ZooGoer, Friends of the National Zoo*, 8(1 & 2)(1979):27–32.



- . "The Social System of the Grey Seal (*Halichoerus grypus*) (Fab.) on Sable Island, Nova Scotia." Ph.D. dissertation, Dalhousie University, Halifax, Canada, 1979.
- Brady, C. A. "Observations on the Behavior and Ecology of the Crab-Eating Fox (*Cerdocyon thous*)." *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 161–72. Washington, D.C.: Smithsonian Institution Press, 1979.
- Brady, C. A., and Ditton, M. K. "The Management and Breeding of Maned Wolves (*Chrysocyon brachyurus*) at the National Zoological Park, Washington, D.C." *International Zoo Yearbook* 19(1979):171–76.
- Davis, S. "Husbandry and Breeding of the Red-Footed Tortoise (*Geochelone carbonaria*) at the National Zoological Park, Washington, D.C." *International Zoo Yearbook* 19(1979):50–52.
- Dittus, W. P. J. "The Evolution of Behaviors Regulating Density and Age-Specific Sex Ratios in a Primate Population." *Behaviour* 29(1979):265–302.
- . "The Social Regulation of Primate Populations: A Synthesis." In *The Macaques: Studies in Ecology, Behavior and Evolution*, ed. D. G. Lindburg. New York: Van Nostrand Reinhold Co., 1980.
- Eisenberg, J. F. "The Density and Biomass of Tropical Mammals." *Conservation Biology: An Evolutionary-Ecological Perspective*, eds. M. E. Soule and B. A. Wilcox, pp. 35–55. Sunderland, Mass.: Sinauer Associates, Inc. 1980.
- . "Habitat, Economy and Society: Some Correlations and Hypotheses for the Neotropical Primates." *Primate Ecology and Human Origins: Ecological Influences on Social Organization*, eds. I. S. Bernstein and E. O. Smith. New York: Garland Press, 1979.
- Eisenberg, J. F., editor. *Vertebrate Ecology in the Northern Neotropics*. Washington, D.C.: Smithsonian Institution Press, 1979.
- Eisenberg, J. F., and Redford, K. "A Biogeographic Analysis of the Mammalian Fauna of Venezuela." *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 31–38. Washington, D.C.: Smithsonian Institution Press, 1979.
- Eisenberg, J. F., O'Connell, M. A., and August, P. V. "Density, Productivity and Distribution of Mammals in Two Venezuelan Habitats." *Vertebrate Ecology in the Northern Neotropics*, ed. John F. Eisenberg, pp. 187–207. Washington, D.C.: Smithsonian Institution Press, 1979.
- Frame, L. H.; Malcolm, J. R.; Frame, G. W.; and Lawick, H. van. "Social Organization of African Wild Dogs (*Lycaon pictus*) on the Serengeti Plains, Tanzania 1968–1978." *Z. Tierpsychol.* 50(1979):225–49.
- Frazier, J. G. "Marine Turtle Management in Seychelles: A Case-Study." *Environmental Conservation* 6(1979):225–30.
- Green, K. M. "Vocalizations, Behavior, and Ontogeny of the Golden Lion Tamarin (*Leontopithecus rosalia rosalia*)." D.Sc. thesis, Johns Hopkins University, Baltimore, 1979.
- Kleiman, D. G. "Lessons from Nature? Monogamy Among Humans and Other Mammals." *Kin and Communities*, eds. A. J. Lichtman and J. R. Challinor, pp. 43–58. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Parent-Offspring Conflict and Sibling Competition in a Monogamous Primate." *American Naturalist* 114(5)(1979):753–60.
- . "The Sociobiology of Captive Propagation." *Conservation Biology: An Evolutionary-Ecological Perspective*, eds. M. E. Soule and B. A. Wilcox, pp. 243–61. Sunderland, Mass.: Sinauer Associates, Inc., 1980.
- Kleiman, D. G., and Davis, T. M. "Ontogeny and Maternal Care." *Biology of the New World Family Phyllostomatidae*. Part III, eds. R. J. Baker, J. K. Jones, Jr., and D. C. Carter, pp. 387–402. Lubbock, Tex.: Special Publications, The Museum, Texas Technological College, 1979.
- Kleiman, D. G., and Mack, D. S. "The Effectives of Age, Sex, and Reproductive



- Status on Scent Marking Frequencies in the Golden Lion Tamarin (*Leontopithecus rosalia*).  
*Folia Primatol.* 33(1980):(1-2):1-14.
- Kleiman, D. G., Eisenberg, J. F., and Maliniak, E. "Reproductive Parameters and Productivity of Cavimorph Rodents." In *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 173-83. Washington D.C.: Smithsonian Institution Press, 1979.
- Kleiman, D. G.; Karesh, W. B.; and Chu, P. R. "Behavioural Changes Associated with Oestrus in the Giant Panda (*Ailuropoda melanoleuca*) with Comments on Female Proceptive Behaviour." *International Zoo Yearbook* 19(1979):217-23.
- Kleiman, D. G.; Grady, L.; Block, J. A.; and Chu, P. R. "The Development of Reproductive and Social Behavior in the Giant Panda." [30-minute, black and white, videotape, available in cassette and reel-to-reel] National Zoological Park, Washington, D.C., 1979.
- Kranz, K., and Ralls, K. "The Scimitar Horned Oryx." *ZooGoer*, Friends of the National Zoo, 8(1979):13-15.
- Larkin, P., and Roberts, M. "Reproduction in the Ringtailed Mongoose (*Gallidia elegans*) at the National Zoological Park." *International Zoo Yearbook* 19(1979):188-93.
- Mack, D. "Growth and Development of Infant Red Howling Monkeys (*Alouatta seniculus*) in a Free Ranging Population." *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 127-36. Washington, D.C.: Smithsonian Institution Press, 1979.
- Marcellini, D., "Activity Patterns and Densities of Venezuelan Caiman (*Caiman crocodilus*) and Pond Turtles (*Prodocnemis vogli*)." *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 263-71. Washington, D.C.: Smithsonian Institution Press, 1979.
- Miller, E. H., and Boness, D. J. "Remarks on Display Functions of the Snout of the Grey Seal (*Halichoerus grypus* (Fab.)) With Comparative Notes." *Canadian Journal of Zoology* 57(1979)(1):140-48.
- Mock, D. W. "Repertoire Shifts and 'Extra-Marital' Courtship in Herons." *Behaviour* 69(1979):57-71.
- Mondolfi, E., and Eisenberg, J. F. "New Records for (*Ateles belzebuth hybridus*) in Northern Venezuela." In *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 93-96. Washington, D.C.: Smithsonian Institution Press, 1979.
- Morton, E. S. "A Comparative Survey of Avian Social System in Northern Venezuela Habitats." In *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 233-59. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Effective Pollination of (*Erythrina fusca*) by the Orchard Oriole (*Icterus spurius*): Co-Evolved Behavioral Manipulation?" *Annals of the Missouri Botanical Garden* 66(1979):482-89.
- . "Adaptations to Seasonal Changes by Migrant Birds in the Panama Canal Zone." *Migrant Birds in the Neotropics: Ecology, Behavior, Distribution, and Conservation*, eds. E. S. Morton and A. Keast, pp. 437-53. Washington, D.C.: Smithsonian Institution Press, 1980.
- . "The Importance of Migrant Birds to the Advancement of Evolutionary Theory." *Migrant Birds in the Neotropics: Ecology, Behavior, Distribution, and Conservation*, eds. E. S. Morton and A. Keast, pp. 555-57. Washington, D.C.: Smithsonian Institution Press, 1980.
- Morton, E. S., and Farabaugh, S. "Infanticide and Other Adaptations of the Nesting Striped Cuckoo (*Tapera naevia*)." *Ibis* 121(1979):212-13.
- O'Connell, M. A. "Ecology of Didelphid Marsupials from Northern Venezuela." *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 73-87. Washington, D.C.: Smithsonian Institution Press, 1979.

- Ralls, K. [Review] *Behavior of Marine Animals, Current Perspectives in Research, Volume 3: Cetaceans*, eds. H. E. Winn and B. L. Olla. *BioScience* 53 (1980)(3):192.
- . Comments on *Sociobiology and Sex Differences*, by Marion Lowe. *Signs* 5(1980):544–45.
- Ralls, K.; Brownell, R. L., Jr.; and Ballou, J. "Differential Mortality by Sex and Age in Mammals with Specific Reference to the Sperm Whale." *Report of the International Whaling Commission. Special Issue* 2(1980):233–44.
- Ralls, K.; Brugger, K.; and Ballou, J. "Inbreeding and Juvenile Mortality in Small Populations of Ungulates." *Science* 206(1979):1101–3.
- Rathbun, C. Dorsey. "Description and Analysis of the Arch Display in the Golden Lion Tamarin (*Leontopithecus rosalia rosalia*)." *Folia Primatologica* 32(1979):125–48.
- Rathbun, Galen B. "Ecological Survey of the Night Monkey (*Aotus trivirgatus*) in Formosa Province, Argentina." *Primates* 21(1980)(2):211–19.
- Rathbun, G. B. "(*Rhynchocyon chrysopygus*) Mammalian Species." *American Society of Mammalogists* 117(1979):1–4.
- . "The Social Structure and Ecology of Elephant Shrews," pp. 1–76. *Z. Tierpsychol., Advances in Ethology Supplement*, No. 20.
- Roberts, M. "The Bear Facts." *ZooGoer, Friends of the National Zoo*, 8(1&2) (1979):7–15.
- Roberts, M., and Kessler, D. "Reproduction in Red Pandas (*Ailurus fulgens*), Carnivora: Ailuropodidae." *J. Zoology (London)* 188(1979):235–49.
- Robinson, John G. "An Analysis of the Organization of Vocal Communication in the Titi Monkey (*Callicebus moloch*)." *Z. Tierpsychol.* 49(1979):381–405.
- . "Correlates of Urine Washing in the Wedge-Capped Capuchin (*Cebus nigrivittatus*)." *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 137–43. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Vocal Regulation of Use of Space by Groups of Titi Monkeys (*Callicebus moloch*)." *Behavioral and Ecological Sociobiology* 5(1979):1–15.
- Rudran, R. "The Demography and Social Mobility of a Red Howler (*Alouatta seniculus*) Population in Venezuela." *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 107–26. Washington, D.C.: Smithsonian Institution Press, 1979.
- Thorington, R. W., Jr.; Rudran, R.; and Mack, D. "Sexual Dimorphism of (*Alouatta seniculus*) and Observations on Capture Techniques." *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 97–106. Washington, D.C.: Smithsonian Institution Press, 1979.
- Troth, R. G. "Vegetational Types on a Ranch in the Central Llanos of Venezuela." *Vertebrate Ecology in the Northern Neotropics*, ed. J. F. Eisenberg, pp. 17–30. Washington, D.C.: Smithsonian Institution Press, 1979.
- Wemmer, C. "Social Organization and the Saber-Tooth Syndrome in Carnivorous Mammals." *Saugetierk. Mitt* 27(1979):127–32.
- Yahner, R. H. "Temporal Patterns in Male Mating Behavior of Captive Reeve's Muntjac (*Muntiacus reevesi*)." *Journal of Mammalogy* 60(1979)(3):560–67.

#### OFFICE OF BIOLOGICAL CONSERVATION

- Ayensu, E. S. "The Jungle, We Know Not What We Do." *The New York Times* (July 19, 1980).

#### RADIATION BIOLOGY LABORATORY

- Ackerman, R. E.; Hamilton, T. D.; and Stuckenrath, R. "Early Culture Complexes on the Northern Northwest Coast." *Canadian Journal of Archaeology* 3(1979):195–209.



- Adavasio, J. M.; Gunn, J. D.; Donahue, J.; Stuckenrath, R.; Guilday, J. R.; and Volman, K. "Yes, Virginia, It Really is That Old: A Reply to Haynes and Mead." *American Antiquity* 45(1980):588-95.
- Andrews, J. T.; Carrara, P. E.; King, F. B.; and Stuckenrath, R. "Holocene Environmental Changes in the Alpine Zone, Northern San Juan Mountains, Colorado: Evidence from Bog Stratigraphy and Palynology." *Quaternary Research* 5(1975):173-92.
- Canaani, O. D., and Gantt, E. "Circular Dichroism and Polarized Fluorescence Characteristics of Blue-Green Algal Allophycocyanins." *Biochemistry* 19 (1980):2950-56.
- Canaani, O.; Lipschultz, C. A.; and Gantt, E. "Reassembly of Phycobilisomes from Allophycocyanin and a Phycocyanin-Phycocerythrin Complex." *FEBS Letters* 115(1980):225-29.
- Chepko, G.; Weistrop, J. S.; and Margulies, M. M. "The Absence of Cytoplasm Ribosomes on the Envelopes of Chloroplasts and Mitochondria in Plants: Implications for the Mechanism of Transport of Proteins into these Organelles." *Protoplasma* 100(1979):385-92.
- Cleland, C. F. "Comparison of the Flowering Behavior of the Long-Day Plant *Lemna gibba* G3 from Different Laboratories." *Plant and Cell Physiology* 20(1979):1263-71.
- Cleland, C. F., and Tanaka, O. "Effect of Daylength on the Ability of Salicylic Acid to Induce Flowering in the Long-Day Plant *Lemna gibba* G3 and the Short-Day Plant *Lemna paucicostata* 6746." *Plant Physiology* 64(1979):421-24.
- Deitzer, G. F.; Hayes R.; and Jabben, M. "Kinetics and Time Dependence of the Effect of Far Red Light on the Photoperiodic Induction of Flowering in Wintex Barley." *Plant Physiology* 64(1979):1015-21.
- Gantt, E. "Photosynthetic Cryptophytes." In *Phytoflagellates: Form and Function*, ed. E. Cox, pp. 381-405. North Holland: Elsevier, 1980.
- . "Structure and Function of Phycobilisomes: Light Harvesting Pigment Complexes in Red and Blue-Green Algae." *International Review of Cytology* 66(1980):45-80.
- . *Handbook of Phycological Methods: Developmental and Cytological Methods*, ed. E. Gantt. London: Cambridge University Press, 1980.
- . "Replica Production and Negative Staining." In *Handbook of Phycological Methods: Developmental and Cytological Methods*, ed. E. Gantt, pp. 377-83. London: Cambridge University Press, 1980.
- Goldberg, B., and Klein, W. H. "A Model for Determining the Spectral Quality of Daylight on a Horizontal Surface at Any Geographical Location." *Solar Energy* 24(1980):351-57.
- Goldberg, B.; Klein, W. H.; and McCartney, R. D. "A Comparison of Some Simple Models Used to Predict Solar Irradiance on a Horizontal Surface." *Solar Energy* 23(1979):81-83.
- Harding, R. W., and Shropshire, W., Jr. "Photocontrol of Carotenoid Biosynthesis." *Annual Review of Plant Physiology* 31(1980):217-38.
- Hyland, F.; Thompson, W. B.; and Stuckenrath, R., Jr. "Late Wisconsin Wood and Other Tree Remains in the Presumpscot Formation, Portland, Maine." *Maritime Sediments* 14(1978):103-20.
- Kawecka, B., and Drake, B. G. "Biology and Ecology of Snow Algae. 1. The Sexual Reproduction of *Chlamydomonas nivalis* (Bauer) Willie (Chlorophyta, Volvocales). *Acta Hydrobiologica* 20(1980):111-16.
- Margulies, M. M. "Release of Ribosomes from Thylakoids and Endoplasmic Reticulum with Trypsin." *Biochimica et Biophysica Acta* 606(1980):13-19.
- Margulies, M. M., and Weistrop, J. S. "Sub-thylakoid Fractions Containing Ribosomes." *Biochimica et Biophysica Acta* 606(1980):20-33.
- Sirkin, L., and Stuckenrath, R. "The Portwashingtonian Warm Interval in the Northern Atlantic Coastal Plain." *Geological Society of America Bulletin* 91(1980):332-36.



- Stanley, D. J.; Knight, R.; and Stuckenrath, R. "High Sedimentation Rates and Variable Dispersal Patterns in the Western Hellenic Trench." *Nature* 273 (1978):110-13.
- Tanaka, O., and Cleland, C. F. "Comparison of the Ability of Salicylic Acid and Ferricyanide to Induce Flowering in the Long-Day Plant, *Lemna gibba* G3." *Plant Physiology* 65(1980):1058-61.
- White, D.; Shropshire, W., Jr.; and Stephens, K. "Photocontrol of Development by *Stigmatella aurantiaca*." *Journal of Bacteriology* 142(1980):1023-24.
- Wiebe, H., and Drake, B. G. "Leaf Temperature Mapping with Thermosensitive Liquid Crystal Models." *BioScience* 30(1980):32-33.
- Yamamoto, K. "Molecular and Spectroscopic Properties of Phytochrome Purified from Etiolated Pea Shoots." Ph.D. dissertation, University of Tokyo, September, 1980.
- Yamamoto, K. T.; Smith, W. O., Jr.; and Furuya, M. "Photoreversible  $CA^{2+}$ -Dependent Aggregation of Purified Phytochrome from Etiolated Pea and Rye Seedlings." *Photochemistry and Photobiology* 32(1980):233-39.

#### SMITHSONIAN ASTROPHYSICAL OBSERVATORY

(Including Contributions from Harvard Members  
of the Center for Astrophysics)

- Aaronson, M.; Huchra, J.; and Mould, J. "The Infrared Luminosity/H I Velocity-Width Relation and Its Application to the Distance Scale." *Astrophysical Journal* 229(1979):1.
- Aaronson, M.; Mould, J.; and Huchra, J. "A Distance Scale from the Infrared Magnitude/H I Velocity-Width Relation I. The Calibration." *Astrophysical Journal* 237(1980):655-65.
- Aaronson, M.; Mould, J.; Huchra, J.; Sullivan, W.; Schommer, R.; and Bothun, G. "The Distance Scale from the Infrared Magnitude/H I Velocity-Width Relation. III. The Expansion Rate Outside the Local Supercluster." *Astrophysical Journal* 239(1980):12.
- Alpern, J., and Grindlay, J. [Abstract] "Photoionization Nebulae Surrounding Accretion X-Ray Sources." *Bulletin of the American Astronomical Society* 11(1980):778.
- Armstrong, J. T.; Johnston, M.; Bradt, H.; Cowley, A.; Doxsey, R.; Griffiths, R.; Hesser, J.; and Schwartz, D. A. "Precise Positions and Optical Search for the 38-Second X-Ray Pulsar near OAO 1653-40 and Upper Limit on X-Ray Emission from V 861 Scorpii/80." *Astrophysical Journal (Letters)* 236(1979):L131-L135.
- Avni, Y.; Soltan, A.; Tananbaum, H.; and Zamorani, G. "A Method for Determining Luminosity Functions Incorporating Both Flux Measurements and Flux Upper Limits, With Applications to the Average X-Ray to Optical Luminosity Ratio for Quasars." *Astrophysical Journal* 238(1980):800-7.
- Baliunas, S. L.; Avrett, E. H.; Hartmann, L.; and Dupree, A. K. "High-Pressure Transition Regions in Stellar Model Chromospheres." *Astrophysical Journal (Letters)* 233(1979):L129-L134.
- Baliunas, S. L., and Butler, S. E. "Silicon Lines as Spectral Diagnostics: The Effect of Charge Transfer." *Astrophysical Journal (Letters)* 235(1980):L45.
- Baliunas, S. L., and Dupree, A. K. "Ultraviolet and Optical Chromospheric Activity in  $\lambda$  Andromedae: Evidence for Starspots and Active Regions." In *Smithsonian Astrophysical Observatory Special Report No. 389*, ed. A. K. Dupree, pp. 101-5. Cambridge, Mass.: Smithsonian Astrophysical Observatory, 1980.
- Bell, B. "Analysis of Viticultural Data by Cumulative Deviations." *Journal of Interdisciplinary History* 10(1980):851-58.
- Black, J. H.; Dalgarno, A.; Dupree, A. K.; Hartmann, L. W.; and Raymond, J. C. "Studies of Interstellar Absorption Lines with IUE." In *The First Year*

- of IUE, ed. A. J. Willis, p. 11. London, England: University College London, 1979.
- Black, J. H.; Dupree, A. K.; Hartmann, L.; and Raymond, J. C. "Highly Ionized Species in the Interstellar Medium." *Astrophysical Journal* 239(1980):502.
- Broadfoot, A. L.; Belton, M. J. S.; Takacs, P. Z.; Sandel, B. R.; Shemansky, D. E.; Holberg, J. B.; Ajello, J. M.; Atreya, S. K.; Donahue, T. M.; Moos, H. W.; Bertraux, J. L.; Blamont, J. E.; Strobel, D. F.; McConnell, J. C.; Dalgarno, A.; Goody, R.; and McElroy, M. B. "Extreme Ultraviolet Observations from Voyager I Encounter with Jupiter." *Science* 204(1979):979-82.
- Butler, S. E., and Dalgarno, A. "Charge Transfer Between  $N^+$  and H." *Astrophysical Journal* 234(1979):765-67.
- Canizares, C. R.; McClintock, J.; and Grindlay, J. E. "A Spectroscopic Study of the Optical Counterparts of Three X-Ray Bursters." *Astrophysical Journal* 234(1979):556-65.
- . "Discovery of the Optical Counterpart of the Transient X-Ray Burster Cen X4." *Astrophysical Journal (Letters)* 236(1980):L55-L59.
- Cassinelli, J. P.; Waldron, W. L.; Vaiana, G. S.; and Rosner, R. [Abstract] "Coronal X-Ray Emission from OB Supergiants." *Bulletin of the American Astronomical Society* 11(1980):775.
- Chaffee, F. H. "Echelle Spectroscopy with Electrographic and Solid State Detectors." *Advances in Electronics and Electron Physics* 52(1979):415-20.
- Chaffee, F. H., and Dunham, T. "Interstellar Lines Toward the Cepheus OB2 Association." *Astrophysical Journal* 233(1979):568-74.
- Chaffee, F. H.; Lutz, B. L.; Black, J. H.; VandenBout, P. A.; and Snell, R. L. "Rotational Fine-Structure Lines of Interstellar  $C_2$  Toward  $\zeta$  Persei." *Astrophysical Journal* 236(1980):474-80.
- Chance, K. V.; Bowen, K. H.; Winn, J. S.; and Klemperer, W. "Electric Deflection Studies of Halogen and Interhalogen Polymers." *Journal of Chemical Physics* 72(2)(1980):791.
- . "Microwave and Radio Frequency Spectrum of  $XeHCl$ ." *Journal of Chemical Physics* 70(11)(1979):5157.
- Charles, P. A.; Thorstensen, J. R.; Bowyer, S.; Griffiths, R. E.; Grindlay, J. E.; Schwartz, D. A.; Canizares, C.; Doxsey, R.; Johnston, M.; and McClintock, J. [Abstract] "The Optical Counterparts of 2S 1556-605, MXB 1905 + 00, 4U 1907 + 09, and A 1916-05." *Bulletin of the American Astronomical Society* 11(1979):720.
- Chevalier, R. A.; Kirschner, R. P.; and Raymond, J. C. "The Optical Emission from a Fast Shock Wave with Application to Supernova Remnants." *Astrophysical Journal* 235(1980):186.
- Cohn, H. "Numerical Integration of the Fokker-Planck Equation and the Evolution of Star Clusters." *Astrophysical Journal* 234(1979):1036.
- Connes, P.; Noxon, J. F.; Carleton, N. P.; and Traub, W. A. " $O_2$  ( $^1\Delta$ ) Emission in the Day and Night Airglow of Venus." *Astrophysical Journal (Letters)* 223(1979):L29-L32.
- Constantinides, E. R.; Dalgarno, A.; and Black, J. H. "The Photochemistry of  $N^+$  Ions." *Geophysical Research Letters* 6(1979):569-72.
- Cook, A. F.; Duxbury, T. C.; and Hunt, G. E. "A Lower Limit on the Top of Jupiter's Haze Layer." *Nature* 280(1979):780-81.
- . "First Results on Jovian Lightning." *Nature* 280(1979):794.
- Cook, A. F.; Shoemaker, E. M.; and Smith, B. A. "Dynamics of Volcanic Plumes on Io." *Nature* 280(1979):743-46.
- Cruddace, R. G.; Dupree, A. K.; Carroll, R. W.; Friedman, H.; Bryan, E. T.; and Wood, K. [Abstract] "X-Ray Observations of W Ursae Majoris Stars." *Bulletin of the American Astronomical Society* 11(1979):721.
- DaCosta, N. L., and Lightman, A. P. "Energy Transfer in Gravitating Systems." *Astrophysical Journal* 228(1979):543.



- Dalgarno, A. "Atomic Physics from Atmospheric and Astrophysical Studies." In *Advances in Atomic and Molecular Physics*, vol. 15, eds. D. R. Bates and B. Bederson, pp. 37–76. New York: Academic Press, 1979.
- . "Diabatic and Resonance Molecular States." *Physica Scripta* 21(1980): 492–94.
- Dalgarno, A., and Roberge, W. G. "Collision-Induced Dissociation of Interstellar Molecules." *Astrophysical Journal (Letters)* 233(1979):L25–L27.
- Dalgarno, A., and Shorer, P. "Nonadiabatic Long-Range Forces." *Physical Review A* 20(1979):1307–09.
- Darbro, W.; Elsner, R.; Ghosh, P.; Weisskopf, M. C.; Grindlay, J. E.; and Sutherland, P. G. [Abstract] "Observations of AMC X-1 with the Monitor Proportional Counter on the Einstein (HEAO-2) Observatory." *Bulletin of the American Astronomical Society* 11(1980):773.
- Davis, M. "Lower Limits to Fluctuations in the Microwave Background Radiation Induced during Recombination." *Physica Scripta* 21(1980):717.
- Davis, M., and Boynton, P. "On the Present Observability of Density-Temperature Fluctuations in the Early Universe." *Astrophysical Journal* 237(1980): 365–70.
- deCampi, W., and Baliunas, S. L. "What Tides and Flares Do to RS CVn Binaries." *Astrophysical Journal* 230(1979):815.
- Delvaille, J. P.; Geller, M. J.; and Schnopper, H. W. [Abstract] "X-Ray Variability of 3C 120 and III Zw2." *Bulletin of the American Physical Society* 24(1979):583.
- Dobrowolny, M. "Wave and Particle Phenomena Induced by an Electrodynamic Tether." *Smithsonian Astrophysical Observatory Special Report No. 388*, 30 pp., 1979.
- Downes, D.; Genzel, R.; Moran, J. M.; Johnson, K. J.; Matveyenko, L. I.; Kogan, L. R.; Kostenko, V. I.; and Ronnang, B. "New VLBI Maps of H<sub>2</sub>O Sources in Different Stages of Evolution." *Astronomy and Astrophysics* 79(1979):233–42.
- Dupree, A. K., editor. "Cool Stars, Stellar Systems, and the Sun." *Smithsonian Astrophysical Observatory Special Report No. 389*, 235 pp., 1980.
- Dupree, A. K.; Black, J. H.; Davis, R. J.; Hartmann, L.; and Raymond, J. C. "Chromospheres and Coronae of Late-Type Stars." In *The First Year of IUE*, ed. A. J. Willis, p. 217. London, England: University College London, 1979.
- Dupree, A. K.; Gursky, H.; Black, J. H.; Davis, R. J.; Hartmann, L.; Matilsky, T.; Raymond, J. C.; Hammerschlag-Hensberge, G.; van den Heuvel, E. P. J.; Burger, M.; Lamers, H. J. G. L. M.; Vanden Bout, P. A.; Morton, D. C.; de Loore, C.; van Dessel, E. L.; Menzies, J. W.; Whitelock, P. A.; Watson, M.; Sanford, P. W.; and Pollard, G. S. G. "Simultaneous Ultraviolet, Optical, and X-Ray Observations of the X-Ray Source Vela X-1 (HD 77581)." *Astrophysical Journal* 238(1980):969–81.
- Dupree, A. K., and Hartmann, L. "Hunting for Black Holes." *Natural History* (October 1979):30.
- Dupree, A. K.; Hartmann, L.; and Preston, S. B. [Abstract] "Chromospheres and Coronae of W UMa Systems." *Bulletin of the American Astronomical Society* 11(1979):721.
- Dupree, A. K.; Hartmann, L.; Raymond, J. C.; Davis, R. J.; and Black, J. [Abstract] "Chromospheres and Coronae of Late-Type Stars." *Bulletin of the American Astronomical Society* 11(1979):448.
- Elsner, R.; Ghosh, P.; Darbro, W.; Weisskopf, M. C.; Sutherland, P. G.; and Grindlay, J. E. "Observations of Cygnus X-3 with the Einstein (HEAO 2) X-Ray Observatory: The Period Derivative and the Asymmetric X-Ray Light Curve." *Astrophysical Journal* 239(1980):335.
- Fabricant, D. G.; Goddard, R. E.; Harnden, F. R., Jr.; and Gorenstein, P. "Lexan Coating to Eliminate the UV Sensitivity of Soft X-Ray Proportional



- Counters with a Polypropylene Window." *Review of Scientific Instruments* 50(1979):727-29.
- Fazio, G. "A Review of Infrared and Submillimeter Astronomy with Balloon-Borne Telescopes." *Infrared Physics* 19(1979):341-51.
- Fireman, E. L. [Abstract] "Carbon-14 Dating of Antarctic Meteorites and Antarctic Ice." *Lunar and Planetary Science XI*, part 1 (1980):288-90.
- . [Abstract] "Carbon-14 in Lunar Samples and in Stony Meteorites." In *Proceedings of Lunar Science Conference, Geochimica et Cosmochimica Acta, Suppl.* 11 1(1979):1053-61.
- . "Depth Dependence of  $^{37}\text{Ar}$  from  $^{39}\text{K}$ : Consequences for Solar Neutrino Experiments and the Baryon Conservation Principle." *Proceedings of the Sixteenth International Cosmic Ray Conference* 13 (1979):389-93.
- Flannery, B. P., and Press, W. H. "An Ionization-Coupled Acoustic Instability of the Interstellar Medium." *Astrophysical Journal* 231(1979):688-96.
- Flannery, B. P.; Roberge, W.; and Rybicki, G. B. "The Penetration of Diffuse Ultraviolet Radiation into Interstellar Clouds." *Astrophysical Journal* 236 (1980):598-608.
- Flannery, B. P.; Rybicki, G. B.; and Sarazin, C. L. "Ultraviolet Pumping of  $\text{N}^+$  Fine-Structure Levels." *Astrophysical Journal* 229(1979):1057-73.
- Forman, W.; Schwarz, J.; Jones, C.; Liller, W.; and Fabian, A. C. "X-Ray Observations of Galaxies in the Virgo Cluster." *Astrophysical Journal (Letters)* 234(1979):L27-L31.
- Fox, J. L., and Dalgarno, A. "Ionization, Luminosity, and Heating of the Upper Atmosphere of Mars." *Journal of Geophysical Research* 84(1979):7315-33.
- . "The Production of Nitrogen Atoms on Mars and Their Escape." *Planetary and Space Science* 28(1980):41-46.
- Franklin, F. A. "Implications from the Motion of Outer Belt Asteroids." *Icarus* 40(1979):329.
- Franklin, F.; Avis, C.; Colombo, G.; and Shapiro, I. I. "The Geometric Oblateness of Uranus." *Astrophysical Journal* 236(1980):1031-34.
- Gaposchkin, E. M. "Averaging on the Surface of a Sphere." *Journal of Geophysical Research* 85(1980):3187-93.
- Garcia, M.; Conroy, M.; Doxsey, R.; Griffiths, R. E.; Johnston, M.; Ralph, E.; Roberts, W.; and Schwartz, D. A. [Abstract] "Locations of Unidentified X-Ray Sources with the HEAO-1 Scanning Modulation Collimator." *Bulletin of the American Astronomical Society* 12(1980):527.
- Geary, J. C. "A Floating Gate Preamplifier Design for Reticon Diode Arrays." *Instrumentation in Astronomy III, Proceedings of the Society of Photo-Optical Instrumentation Engineers* 172(1979):82.
- Genzel, R., and Downes, D. " $\text{H}_2\text{O}$  in the Galaxy. II: Duration of the Maser Phase and the Galactic Distribution of  $\text{H}_2\text{O}$  Sources." *Astronomy and Astrophysics* 72(1979):234.
- Genzel, R.; Downes, D.; Moran, J. M.; Johnston, K. J.; Spencer, J. H.; Matveyenko, L. I.; Kogan, L. R.; Kostenko, V. I.; Rönnang, B.; Haschick, A. D.; Reid, M. J.; Walker, R. C.; Giuffrida, T. S.; Burke, B. F.; and Moiseev, I. G. " $\text{H}_2\text{O}$  in W51 Main: An Expanding Bubble Around a Young Massive Star?" *Astronomy and Astrophysics* 78(1979):239.
- Genzel, R.; Downes, D.; Pauls, T.; Wilson, T. L.; and Bieging, J. "Interstellar CH: Excitation Temperatures and Abundance Relative to  $\text{H}_2\text{CO}$ ." *Astronomy and Astrophysics* 73(1979):253.
- Genzel, R.; Downes, D.; Schwartz, P. R.; Spencer, J. H.; Pankonin, V.; and Baars, J. "SiO Emission in Orion: An Evolved Star in a Region of Star Formation or a Unique Object in the Galaxy." *Astrophysical Journal* 239(1980):519.
- Genzel, R.; Moran, J. M.; Lane, A. P.; Predmore, C. R.; Ho, P. T. P.; Hansen,

- S. S.; and Reid, M. J. "VLBI Observations of the SiO Maser in Orion." *Astrophysical Journal (Letters)* 231(1979):L73-L76.
- Giacconi, R. "Recent Advances in X-Ray Astronomy." In *Proceedings of the ISAS Symposium on Results and Future Prospects of X-Ray Astronomy*, pp. 216-59. Tokyo, Japan: University of Tokyo.
- . "Recent Advances in X-Ray Astronomy." In *Proceedings of the 1979 IUPAP Sixteenth International Cosmic Ray Conference* 14(1979):19-41.
- . "X-Ray Astronomy." *Scientific American* 242(1980):80-102.
- Giacconi, R.; Bechtold, J.; Branduardi, G.; Forman, W.; Henry, J. P.; Jones, C.; Kellogg, E.; van der Laan, H.; Liller, W.; Marshall, H.; Murray, S. S.; Pye, J.; Schreier, E.; Sargent, W. L. W.; Seward, F.; and Tananbaum, H. "A High Sensitivity X-Ray Survey Using the Einstein Observatory and the Discrete Source Contribution to the Extragalactic X-Ray Background." *Astrophysical Journal (Letters)* 234(1979):L1-L7.
- Gingerich, O. "Albert Einstein: A Laboratory in the Mind." In *Science Year, The World Book Science Annual*, pp. 397-410. Chicago, Ill.: World Book—Childcraft International, 1979.
- . "Commission 41 at the Montreal IAU Congress." *Journal of the History of Astronomy* 10(1979):189-92.
- . "Smithsonian's Argus." *Harvard Magazine* 81(1979):81-88.
- . "The Aethereal Sky: Man's Search for a Plenum Universe." *Great Ideas Today* (1979):68-86.
- . "The Great Copernicus Chase." *American Scholar* 49(1979):81-88.
- . [Abstract] "The Censorship of Copernicus' *De Revolutionibus*." *Bulletin of the American Astronomical Society* 11(1980):661.
- . "The Ring of Brogar." *Harvard Magazine* 81(1979):5-6.
- . [Abstract] "Radio Astronomy and the Nature of Science." Abstracts of Papers of the 146th National Meeting, American Association for the Advancement of Science (1980):93.
- . "Renaissance Astronomy and the Rise of Humanism." In *Humanism and the Development of Cultures*, pp. 404-15, 1980.
- . "The Censor's Tracts." *Harvard Magazine* 82(1980):12-13.
- . "Walter Baade." In *Dictionary of American Biography, Supplement 6*, pp. 30-32. New York: Scribner's, 1980.
- Golub, L.; Harnden, F. R., Jr.; Rosner, R.; Topka, K.; and Vaiana, G. S. [Abstract] "X-Ray Observations of the Alpha Cen System from Einstein." *Bulletin of the American Astronomical Society* 11(1980):775.
- Golub, L.; Maxson, C.; Rosner, R.; Serio, S.; and Vaiana, G. S. "Magnetic Fields and Coronal Heating." *Astrophysical Journal* 238(1980):343-48.
- Gorenstein, P.; Fabricant, D.; Topka, K.; and Harnden, F. R., Jr. "Soft X-Ray Structure of the Coma Cluster of Galaxies." *Astrophysical Journal* 230(1979):26-34.
- Grindlay, J. E. "The Optical Counterpart of GX 339 - 4, a Possible Black Hole X-Ray Source." *Astrophysical Journal (Letters)* 232(1979):L33-L37.
- . "X-Ray Studies of Globular Clusters, Bursters, and Galactic Bulge Sources." In *Proceedings of the Workshop on "Observing Compact Objects,"* pp. 99-104. Washington, D.C., 1979.
- Grindlay, J.; Branduardi, G.; Hertz, P.; Marshall, H.; and Murray, S. [Abstract] "Precise Locations of Globular Cluster X-Ray Sources Observed by the Einstein Observatory." *Bulletin of the American Physical Society* 24(1979):584.
- Grindlay, J.; Steiner, J.; Forman, W.; Canizares, C.; and McClintock, J. "Discovery of Low Redshift X-Ray Quasars: A Possible New Key to the QSO Phenomenon." *Astrophysical Journal (Letters)* 239(1980):L43. Abstract in *Bulletin of the American Astronomical Society* 11(1980):777.
- Gursky, H.; Black, J. H.; Davis, R. J.; Dupree, A. K.; Hartmann, L.; Howarth,



- I.; Matilsky, T.; Raymond, J.; Willis, A. J.; and Wilson, R. "IUE Observations of the X-Ray Source HZ Herculis/Her X-1." In *The First Year of IUE*, ed. A. J. Willis, p. 305. London, England: University College London, 1979.
- Gursky, H.; Dupree, A. K.; Hartmann, L. W.; Raymond, J.; Davis, R. J.; Black, J.; Matilsky, T. A.; Howarth, I. D.; Willis, A. J.; Wilson, R.; Sandford, M. C. W.; Vanden Bout, R.; Sanner, F.; Hammerschlag-Hensberg, G.; van den Heuvel, E. P. J.; Lamers, H. J. G. L. M.; Burger, M.; and de Loore, C. "The Observations of the X-Ray Source HZ Herculis/Her X-1." *Astrophysical Journal* 237(1980): 163–68.
- Gursky, H.; Hartmann, L.; Black, J. H.; Davis, R. J.; Raymond, J. C.; Dupree, A. K.; and Matilsky, T. "IUE Observations of Globular Clusters." In *The First Year of the IUE*, ed. A. J. Willis, pp. 319–30. London, England: University College London, 1979.
- Gursky, H., and Leach, R. W. "The Cosmic Ray Background in Charge Coupled Devices." *Publications of the Astronomical Society of the Pacific* 91(1980): 855.
- Habbal, S. R.; Leer, E.; and Holzer, T. E. "Heating of Coronal Loops by Fast Mode MHD Waves." *Solar Physics* 64(1979):287–301.
- Habbal, S. R., and Rosner, R. "Thermal Instabilities in Magnetically Confined Plasmas: Solar Coronal Loops." *Astrophysical Journal* 234(1979):1113–21.
- Hagen, W.; Black, J. H.; Dupree, A. K.; and Holm, A. V. "Ultraviolet Spectroscopic Observations of VV Cephei." *Astrophysical Journal* 238(1980):203–9.
- Harnden, F. R., Jr.; Beuhler, B.; Giacconi, R.; Grindlay, J.; Hertz, P.; Schreier, E.; Seward, F.; Tananbaum, H.; and van Speybroeck, L. [Abstract] "X-Ray Observations of the Crab Nebula with the Einstein Observatory." *Bulletin of the American Astronomical Society* 11(1980):789.
- Harnden, F. R., Jr.; Branduardi, G.; Elvis, M.; Gorenstein, P.; Grindlay, J.; Pye, J. P.; Rosner, R.; Topka, K.; and Vaiana, G. S. "Discovery of an X-Ray Star Association in V Cygni (Cygnus OB2)." *Astrophysical Journal (Letters)* 234(1979):L51–L54.
- Harnden, F. R., Jr.; Golub, L.; Rosner, R.; Seward, F.; Topka, K.; and Vaiana, G. S. [Abstract] "O Stars and Ob Associations Observed from Einstein." *Bulletin of the American Astronomical Society* 11(1980):775.
- Harnden, F. R., Jr.; Hertz, P.; Gorenstein, P.; Grindlay, J.; Schreier, E.; and Seward, F. [Abstract] "High Resolution X-Ray Images of the Crab and Vela Pulsars." *Bulletin of the American Physical Society* 25(1980):509.
- Harris, D. E., and Grindlay, J. E. "The Prospects for X-Ray Detection of Inverse Compton Emission from Radio Source Electrons and Photons of the Microwave Background." *Monthly Notices of the Royal Astronomical Society* 188(1979):25–27.
- Hartmann, L.; Davis, R.; Dupree, A. K.; Raymond, J.; Schmidtke, P. C.; and Wing, R. F. "Chromospheres of the Active Dwarf Binaries EQ Peg and  $\xi$  Boo." *Astrophysical Journal (Letters)* 233(1979):L69.
- Hartmann, L.; Dupree, A. K.; and Raymond, J. C. "Hybrid Atmospheres and Winds in Supergiant Stars." *Astrophysical Journal (Letters)* 236(1980):L143.
- Hartmann, L.; Jaffe, D.; and Huchra, J. "On the Nature of MWC 349." *Astrophysical Journal* 239(1980):905–10.
- Hartquist, T. W.; Oppenheimer, M.; and Dalgarno, A. "Molecular Diagnostics in Interstellar Shocks." *Astrophysical Journal* 236(1980):182–88.
- Hartquist, T. W.; Oppenheimer, M.; and Elmegreen, B. "The Effect of Cosmic Ray Screening Upon the Stability of Interstellar Clouds." *Astronomy and Astrophysics* 75(1979):137–39.
- Haschick, A. D.; Crane, P. C.; Greenfield, P. E.; Baan, W. A.; and Burke, B. F. "High Resolution Observations of the Neutral Hydrogen Absorption and Radio Continuum Emission of the Radio Source 3C 178." *Astrophysical Journal* 239(1980):774.



- Haschick, A. D.; Moran, J. M.; Rodriguez, L. F.; Burke, B. F.; Greenfield, P. E.; and Garcia-Barreto, J. A. "Observations of a Compact H II Region and Water Vapor Maser Sources in the Vicinity of the Herbig-Haro Objects 7-11." *Astrophysical Journal* 237(1980):26-37.
- Haschick, A. D.; Reid, M. J.; Moran, J. M.; and Miller, G. [Abstract] "VLBI Aperture Synthesis Observations of the OH Maser Source W75N." *Bulletin of the American Astronomical Society* 12(1980):484.
- Heil, T. G., and Dalgarno, A. "Diabatic Molecular States." *Journal of Physics B, Atomic and Molecular Physics* 12(1979):L557-L560.
- Helmken, H. F.; Horine, E.; and Weekes, T. C. "The Mt. Hopkins Sky Survey for Gamma Rays of Energy 100-1000 GeV I: Observations." *Proceedings of the Sixteenth International Cosmic Ray Conference, Kyoto, Japan* 1(1979):120.
- Henry, J. P.; Branduardi, G.; Briel, U.; Fabricant, D.; Feigelson, E.; Murray, S.; Soltan, A.; and Tananbaum, H. "Detection of X-Ray Emission from Distant Clusters of Galaxies." *Astrophysical Journal (Letters)* 234(1979):L15-L19.
- Hertz, P., and Grindlay, J. [Abstract] "Structure and Isothermality of X-Ray Globular Clusters." *Bulletin of the American Astronomical Society* 11(1980):787.
- Johnson, H. M.; Schnopper, H. W.; and Delvaille, J. P. "SAS-3 and Related Observations of Abell 2029." *Astrophysical Journal* 236(1980):738-44.
- Johnson, T. V.; Cook, A. F.; Sagan, C.; and Soderblom, L. A. "Volcanic Resurfacing Rates and Implications for Volatiles on Io." *Nature* 280(1979):746-50.
- Johnston, M. C.; Doxsey, R. E.; Marshall, F. E.; and Schwartz, D. A. [Abstract] "Discovery of a Bright X-Ray Cluster of Galaxies at Low Galactic Latitude." *Bulletin of the American Astronomical Society* 12(1980):487.
- Jones, C.; Mandel, E.; Schwarz, J.; Forman, W.; Murray, S. S.; and Harnden, F. R., Jr. "The Structure and Evolution of X-Ray Clusters." *Astrophysical Journal (Letters)* 234(1979):L21-L25.
- Kahler, S. W.; Golub, L.; Harnden, F. R., Jr.; Steward, F. D.; and Vaiana, G. S. [Abstract] "Coordinated X-Ray, Optical and Radio Observations of Flares from the dMe Star YZ Canis Majoris." *Bulletin of the American Astronomical Society* 12(1980):526.
- Kalkofen, W., and Klein, R. I. "Stellar Atmosphere in Statistical Equilibrium." *Astrophysical Journal* 234(1979):200-5.
- Kalkofen, W.; Klein, R. I.; and Stein, R. F. "Deviations from LTE in a Stellar Atmosphere," *Journal of Quantitative Spectroscopy and Radiative Transfer* 21(1979):355.
- Kalkofen, W., and Ulmschneider, P. "Acoustic Dissipation and H<sup>-</sup> Radiation in the Solar Chromosphere. II." *Astrophysical Journal* 227(1979):655-63.
- Katz, J., and Lecar, M. "A Note on the Stability of One-Dimensional Self-Gravitating Isothermal Systems." *Astrophysics and Space Science* 68(1980):495.
- Kirby, K.; Constantinides, E. R.; Babeu, S.; Oppenheimer, M.; and Victor, G. A. "Photoionization and Photoabsorption Cross Sections of He, O, N<sub>2</sub>, and O<sub>2</sub> for Aeronomic Calculations." *Atomic Data and Nuclear Data Tables* 23(1979):63-81.
- Kirby, K.; Roberge, W.; Saxon, R. P.; and Liu, B. "Photodissociation Cross Sections and Rates for CH<sup>+</sup> in Interstellar Clouds." *Astrophysical Journal* 239(1980):855-58.
- Knight, R. D., and Prior, M. H. "Radiative Lifetime of Metastable 2<sup>3</sup>S<sub>1</sub> Li<sup>+</sup>." *Physical Review A* 21(1980):179.
- Koch, D. "The Infrared Telescope on Spacelab 2." *Space Optics, Society of Photo-Optical Instrumentation Engineers* 183(1979):16.
- Kurucz, R. L. [Abstract] "SiO in the Ultraviolet Solar System." *Bulletin of the American Astronomical Society* 11(1980):710.

- Kurucz, R. L., and Furenlid, I. "A Sample Spectral Atlas for Sirius." *Smithsonian Astrophysical Observatory Special Report No. 387*, 142 pp., 1980.
- Lane, A. P.; Predmore, C. R.; Genzel, R.; and Moran, J. M. [Abstract] "SiO Maser Emission from Late-Type Stars and Orion." *Bulletin of the American Astronomical Society* 12(1980):499.
- Lang, K., and Gingerich, O. *Source Book in Astronomy and Astrophysics 1900–1975*. Cambridge, Mass.: Harvard University Press, 1979.
- Layzer, D.; Rosner, R.; and Doyle, H. T. "On the Origins of Solar Magnetic Fields." *Astrophysical Journal* 229(1979):1126–37.
- Leach, R. W.; Schild, R. E.; Gursky, H.; Madejski, G. W.; Schwartz, D. A.; and Weekes, T. C. "Description, Performance and Calibration of a Charge Coupled Device Camera." *Publications of the Astronomical Society of the Pacific* 92(1980):233–45.
- Levine, R. H.; Schulz, M.; and Frazier, E. N. [Abstract] "Improved Models of Coronal Magnetic Structure: The Non-Spherical Source Surface." *Bulletin of the American Astronomical Society* 11(1980):697.
- Lightman, A. P.; and Rybicki, G. B. "Inverse Compton Reflection: The Steady State Theory." *Astrophysical Journal* 236(1980):928–44.
- . "Inverse Compton Reflection: Time Dependent Theory." *Astrophysical Journal* 232(1979):882–90.
- Liller, M. H. "Historical Light Curve for Stepanian's Variable Star in Serpens." Information Bulletin on Variable Stars No. 1743, 1980.
- Liller, M. H., and Schommer, R. A. "Photometric Observations of the Variable (?) uv-Bright Star K1082 in M15." Information Bulletin on Variable Stars No. 1752, 1980.
- London, R.; McCray, R.; and Auer, L. H. [Abstract] "The Structure of X-Ray Illuminated Stellar Atmospheres." *Bulletin of the American Astronomical Society* 12(1980):520.
- McBreen, B.; Fazio, G.; Stier, M.; and Wright, E. L. "Evidence for a Variable Far-Infrared Source in NGC 6334." *Astrophysical Journal (Letters)* 232(1979):L183–L188.
- Marsden, B. G. "Introduction." In *Dynamics of the Solar Systems*, ed. R. L. Duncombe, pp. ix–x. Dordrecht, Holland: D. Reidel Publishing Company, 1979.
- . [Abstract] "Rediscoveries of Lost One-Apparition Comets." *Bulletin of the American Astronomical Society* 11(1979):801.
- . "Report of the Central Bureau for Astronomical Telegrams (Commission No. 6)." *Transactions of the International Astronomical Union* 17A(1979):13–14.
- . "Report of IAU Commission No. 20." *Transactions of the International Astronomical Union* 17A(1979):133–44.
- Marshall, H.; Grindlay, J.; and Weisskopf, M. [Abstract] "Observations of the Rapid Burster (MXB1730-335) Using the Einstein Observatory." *Bulletin of the American Astronomical Society* 11(1980):788.
- Marvin, U. B. "An Unpublished Memoir on Meteorites by Lyman Spaulding, 1810." *Meteoritics* 14(1979):197–205.
- . "Impact of Technology on Volcanology, Geochemistry, and Petrology." In *Impact of Technology on Geophysics*, Chapter 10, Studies in Geophysics, pp. 87–95. Washington, D.C.: National Academy of Sciences, 1979.
- Marvin, U. B. "Guidebook to Breccia 67015." Curatorial Branch Publication 51. Houston, Texas: Lyndon B. Johnson Space Center, 1979.
- McClintock, J.; Canizares, C.; Li, F.; and Grindlay, J. "Simultaneous X-Ray and Optical Studies of the 7<sup>s</sup> X-Ray Pulsar 4U1626-67." *Astrophysical Journal (Letters)* 235(1980):L81–L85.
- Millis, A. J., and Liller, M. H. "The Variable Stars in NGC 6584." *Astronomical Journal* 85(1980):234–41.



- Moran, J. M., and Rodriguez, L. F. [Abstract] "Water Vapor Masers and Star Formation in NGC 6334." *Bulletin of the American Astronomical Society* 11(1979):714.
- . "Water Vapor Masers and Star Formation in NGC 6334." *Astrophysical Journal (Letters)* 236(1980):L159–L163.
- Mould, J.; Aaronson, M.; and Huchra, J. "A Distance Scale from the Infrared Magnitude/H I Velocity-Width Relation II. The Virgo Cluster." *Astrophysical Journal* 238(1980):458–70.
- Murray, S. S.; Fabbiano, G.; Fabian, A.; Epstein, A.; and Giacconi, R. "High Resolution X-Ray Observation of the Cas Supernova Remnant with the Einstein Observatory." *Astrophysical Journal (Letters)* 234(1979):L69.
- Nisenson, P., and Stachnik, R. V. "Speckle Imaging." In *Proceedings of the IAU Colloquium on Optical Interferometry*, University of Sydney, 1979.
- Noyes, R. W. "Overview on the Study of the Solar Cycle from Space." In *NASA Conference Publication 2098, Proceedings of the Symposium on the Study of the Solar Cycle from Space*, pp. 31–42. Washington, D.C.: NASA, 1979.
- . "The Sun as a Star." In *Smithsonian Astrophysical Observatory Special Report No. 389*, pp. 1–13, 1980.
- Pallavicini, R., and Poletto, G. "Risultati Recenti e Problemi Aperti in Fisica Solare." *Giornale di Astron.* 5(1979):19, 105.
- Perrenod, S. C., and Chaisson, E. J. "A Search for 21-cm Absorption in Quasars of High Redshift." *Astrophysical Journal* 232(1979):49.
- Peterson, R. C.; Willmarth, D. W.; Carney, B. W.; and Chaffee, F. H. "BD  $-0^{\circ}4234$ : A High Velocity, Metal-Poor, Double-Lined Spectroscopic Binary." *Astrophysical Journal* 239(1980):928–36.
- Pineda, F. J.; Delvaille, J. P.; Grindlay, J. E.; Huchra, J.; and Schnopper, H. W. "X-Ray and Optical Observations of MCG-6-30-15." *Astrophysical Journal* 237(1980):414–23.
- Press, W. H. "On Gravitational Conductors, Waveguides, and Circuits." *General Relativity and Gravitation* 11(1979):105.
- . "Spontaneous Production of the Zel'dovich Spectrum of Cosmological Fluctuations." *Physica Scripta* 21(1980):702.
- Press, W. H., and Vishniac, E. T. "Production of New Cosmological Perturbations during the Radiation-Dominated Era." *Nature* 279(1979):137.
- . "Propagation of Adiabatic Cosmological Perturbations Through the Era of Matter-Radiation Decoupling." *Astrophysical Journal* 236(1980):323–34.
- . "Tenacious Myths About Cosmological Perturbations Larger than the Horizon Size." *Astrophysical Journal* 239(1980):1.
- Raymond, J. C.; Black, J. H.; Davis, R. J.; Dupree, A. K.; Hartmann, L.; and Matilsky, T. A. "Ultraviolet Observations of AM Herculis with IUE." *Astrophysical Journal (Letters)* 230(1979):L95.
- Raymond, J. C.; Black, J. H.; Dupree, A. K.; Hartmann, L.; and Wolff, R. S. "Ultraviolet Observations of the Cygnus Loop." *Astrophysical Journal* 238(1980):881–85.
- Raymond, J. C.; Davis, M.; Gull, T.; and Parker, R. A. R. "Optical Detection of a Fast Shock Wave Associated with the Cygnus Loop." *Astrophysical Journal (Letters)* 238(1980):L21.
- Raymond, J. C.; Noyes, R. W.; and Stopa, M. P. "The Balmer 9 and Balmer 11 Lines of He II in the Sun." *Solar Physics* 61(1979):271–77.
- Reid, M. J.; Haschick, A. D.; Burke, B. F.; Moran, J. M.; Johnston, K. J.; and Swenson, G. W. "The Structure of Interstellar Hydroxyl Masers: VLBI Synthesis Observations of W3(OH)." *Astrophysical Journal* 239(1980):89.
- Robertson, D. S.; Carter, W. E.; Corey, B. E.; Counselman, C. C.; Shapiro, I. I.; Wittels, J. J.; Hinteregger, H. F.; Knight, C. A.; Rogers, A. E. E.; Whitney,



- A. R.; Ryan, J. W.; Clark, T. A.; Coates, R.; Ma, C.; and Moran, J. M. "Recent Results of Radio Interferometry Determination of Polar Motion and Earth Rotation." In *Proceedings of the International Astronomical Union Symposium No. 86, Time and the Earth's Rotation*, eds. D. D. McCarthy and J. D. Pilkington, pp. 217–24. Dordrecht, Holland: D. Reidel Publishing Company, 1979.
- Rodriguez, L. F., and Chaisson, E. J. "On the Ionizing Agent of the Extended Thermal Component in the Galactic Center." *Astrophysical Journal* 231 (1979):697.
- Rodriguez, L. F., and Chaisson, E. J. "On the Radio and Near-Infrared Hydrogen-Line Emission from M82." *Astrophysical Journal* 238(1980):41.
- . [Abstract] "The Temperature and Dynamics of the Ionized Gas in the Nucleus of Our Galaxy." *Bulletin of the American Astronomical Society* 10(1979):679.
- Rodriguez, L. F.; Ho, P. T. P.; and Moran, J. M. [Abstract] "High Velocity CO Emission from Cepheus A." *Bulletin of the American Astronomical Society* 11(1979):714.
- Rodriguez, L. F.; Moran, J. M.; Ho, P. T. P.; and Gottlieb, E. W. [Abstract] "Radio Observations of Water Vapor, Hydroxyl, Silicon Monoxide, Ammonia, Carbon Monoxide, and Compact H II Regions in the Vicinities of Herbig-Haro Objects." *Bulletin of the American Astronomical Society* 11(1979):400.
- Rosner, R.; Giacconi, R.; Golub, L.; Harnden, F. R., Jr.; Topka, K.; and Vaiana, G. S. [Abstract] "X-Ray Observations of Very Late-Type Dwarf Stars from the Einstein Observatory." *Bulletin of the American Astronomical Society* 11(1980):776.
- Rybicki, G. B., and Lightman, A. P. *Radiative Processes in Astrophysics*. New York: John Wiley, 1980.
- Sakurai, T. "A New Approach to the Force-Free Field and Its Application to the Magnetic Field of Solar Active Regions." *Publications of the Astronomical Society of Japan* 31(1979):209.
- Sandel, B. R.; Shemansky, D. E.; Broadfoot, A. L.; Bertaux, J. L.; Blamont, J. E.; Belton, M. J. S.; Ajello, J. M.; Holberg, J. B.; Atreya, S. K.; Donahue, T. M.; Moos, H. W.; Strobel, D. F.; McConnell, J. C.; Dalgarno, A.; Goody, R.; McElroy, M. B.; and Takacs, P. Z. "Extreme Ultraviolet Observations from Voyager 2 Encounter with Jupiter." *Science* 206(1979):962–66.
- Schild, R.; Leach, R.; Weekes, T.; and Gursky, H. "Study of Einstein Observatory Fields with a CCD Camera." *Astronomical Journal* 85(1980):121.
- Schild, R. E., and Weekes, T. C. "CCD Camera Photometry of cD Galaxies in Poor Clusters." In *Proceedings of the Conference on Photometry Kinematics and Dynamics of Galaxies*, ed. D. S. Evans, p. 59. Austin, Tex.: University of Texas Press, 1979.
- Schreier, E. J.; Feigelson, E.; Delvaille, J.; Giacconi, R.; Grindlay, J. E.; Schwartz, D. A.; and Fabian, A. C. "Einstein Observations of the X-Ray Structure of Centaurus A: Evidence for the Radio Lobe Energy Source." *Astrophysical Journal (Letters)* 234(1979):L39–L43.
- Schwartz, D. A. "A-3 Scientific Results—Extragalactic." In *HEAO Science Symposium*, edited by C. Dailey and W. Johnson, pp. 114–39, NASA CP-2113. Washington, D.C.: National Aeronautics and Space Administration, 1980.
- . "Irregularities in the X-Ray Background." *Physica Scripta* 21(1980):644.
- Schwartz, D. A.; Bradt, H.; Briel, U.; Doxsey, R. E.; Fabbiano, G.; Griffiths, R. E.; Johnston, M. D.; and Margon, B. "Location of Three Stellar X-Ray Sources at High Galactic Latitudes by the HEAO-1 Scanning Modulation Collimator." *Astronomical Journal* 84(1979):1560–65.
- Schwartz, D. A.; Garcia, M.; Conroy, M.; Ralph, E.; Roberts, W.; Griffiths, R. E.; Johnston, M.; McHardy, I.; Lawrence, A.; and Pye, J. [Abstract]

- "Precise Location of 3A2352+28: The High Galactic Latitude Transient A0000+28." *Bulletin of the American Astronomical Society* 12(1980):513.
- Schwartz, D. A.; Giacconi, R.; Griffiths, R. E.; Maccacaro, T.; Murray, S. S.; and Zamorani, G. [Abstract] "The Slope of the Faint X-Ray Source Counts and Models of Cosmological Evolution." *Bulletin of the American Astronomical Society* 11(1979):652.
- Schwartz, D. A.; Griffiths, R. A.; Thorstensen, J. R.; Charles, P. A.; and Bowyer, S. "Optical Identification of 4U 1907+09 Using the HEAO-1 Scanning Modulation Collimator Position." *Astronomical Journal* 85(1979): 549-54.
- Schwartz, D. A.; Henry, P.; Maccacaro, T.; Tananbaum, H. D.; and Zamorani, G. [Abstract] "A Method for the Analysis of Heterogeneous Samples: The Shape of the Quasar X-Ray Luminosity Function." *Bulletin of the American Astronomical Society* 11(1979):772.
- Sekanina, Z. "Expected Characteristics of Large Dust Particles in Periodic Comet Halley." In *The Comet Halley Micrometeoroid Hazard*, ed. N. Longdon, pp. 25-34. Noordwijk, Holland: ESTEC, 1979.
- . [Abstract] "Physical Similarities Between Dissipating Comets and Short-Lived Fragments of the Split Comets." *Bulletin of the American Astronomical Society* 12(1980):511.
- Seward, F. D.; Forman, W. R.; Giacconi, R.; Griffiths, R. E.; Harnden, F. R., Jr.; Jones, C.; and Pye, J. P. "X-Rays from Eta Carinae and the Surrounding Nebula." *Astrophysical Journal (Letters)* 234(1979):L55-L58.
- Shorer, P., and Dalgarno, A. "Applications of the Relativistic Random Phase Approximation." *Physica Scripta* 21(1980):432-35.
- Smith, B. A.; Shoemaker, E. M.; and Cook, A. F. "The Role of SO<sub>2</sub> in Volcanism on Io." *Nature* 280(1979):738-43.
- Smith, B. A.; Soderblom, L. A.; Beebe, R.; Boyce, J.; Briggs, G.; Carr, M.; Collins, S. A.; Cook, A. F.; Danielson, G. E.; Davies, M. E.; Hunt, G. E.; Ingersoll, A. P.; Johnson, T. V.; Masursky, H.; McCauley, J.; Morrison, D.; Owen, T.; Sagan, C.; Shoemaker, E. M.; Strom, R.; Suomi, V. E.; and Veverka, J. "The Galilean Satellites and Jupiter: Voyager 2 Imaging Science Results." *Science* 206(1979):927-50.
- Smith, B. A.; Soderblom, L. A.; Johnson, T. V.; Ingersoll, A. P.; Collins, S. A.; Shoemaker, E. M.; Hunt, G. E.; Masursky, H.; Carr, M. H.; Davies, M. E.; Cook, A. F.; Boyce, J.; Danielson, G. E.; Owen, T.; Sagan, C.; Beebe, R. F.; Veverka, J.; Strom, R. G.; McCauley, J. F.; Morrison, D.; Briggs, G. A.; and Suomi, V. E. "The Jupiter System through the Eyes of Voyager 1." *Science* 204(1979):951-72.
- Smith, H. A.; Millis, A. J.; and Liller, M. H. "On the Suspected Ultra-Short Period Variable in M15." *Publications of the Astronomical Society of the Pacific* 91(1979):671-73.
- Taam, R. E.; Flannery, B. P.; and Faulkner, J. "Gravitational Radiation and the Evolution of Cataclysmic Binaries." *Astrophysical Journal* 239(1980):1017-23.
- Tananbaum, H.; Avni, Y.; Branduardi, G.; Elvis, M.; Fabbiano, G.; Feigelson, E.; Giacconi, R.; Henry, J. P.; Pye, J. P.; Soltan, A.; and Zamorani, G. "X-Ray Studies of Quasars with the Einstein Observatory." *Astrophysical Journal (Letters)* 234(1979):L9-L13.
- Tananbaum, H.; Epstein, A.; Forman, W.; Giacconi, R.; Grindlay, J.; Harnden, F. R., Jr.; Jones, C.; Schreier, E.; Seward, F.; and Van Speybroeck, L. [Abstract] "X-Ray Observations of the Crab Nebula with the Einstein Observatory." *Bulletin of the American Astronomical Society* 11(1979):424.
- Tang, C. H., and Grossi, M. D. "Results of the Viking Radioelectric Measurements of Mars Surface Properties." In *Proceedings of the Second Colloquium on Planetary Water and Polar Processes*, pp. 51-54. Hanover, N.H.: U.S. Army Cold Regions Research and Engineering Laboratory, 1979.
- Thorstensen, J.; Charles, P.; Bowyer, S.; Briel, U. G.; Doxsey, R. E.; Griffiths,



- R. E.; and Schwartz, D. A. "A Precise Position and Optical Identification for 4U 2129 + 47: X-Ray Heating and a 5.2-Hour Binary Period." *Astrophysical Journal (Letters)* 233(1979):L57-L61.
- Topka, K.; Fabricant, D.; Harnden, F. R., Jr.; Gorenstein, P.; and Rosner, R. "Detection of Soft X-Rays from Alpha Lyrae and Eta Bootis with an Imaging X-Ray Telescope." *Astrophysical Journal* 229(1979):661-68.
- Topka, K.; Golub, L.; Harnden, F. R., Jr.; Gorenstein, P.; Rosner, R.; and Vaiana, G. S. [Abstract] "A Magnitude Limited Stellar Survey with Einstein." *Bulletin of the American Astronomical Society* 11(1980):781.
- Turner, E. L., and Geller, M. "The Correlation of the Cosmic X-Ray Background with the Light of Galaxies." *Astrophysical Journal* 236(1980):1-5.
- Vaiana, G. S. "Stellar Coronae: Overview of the Einstein/CFA Stellar Survey." In *Smithsonian Astrophysical Observatory Special Report No. 389*, pp. 195-215. 1980.
- Van Speybroeck, L.; Bechtold, J.; Epstein, A.; Forman, W.; Giacconi, R.; Grindlay, J.; Jones, C.; Murray, S.; Schreier, E., and Seward, F. [Abstract] "Observations of X-Ray Sources in M31 with the Einstein Observatory." *Bulletin of the American Astronomical Society* 11(1980):609.
- Van Speybroeck, L.; Elvis, M.; Epstein, A.; Forman, W.; Giacconi, R.; Grindlay, J.; Jones, C.; Murray, S.; Schreier, E.; and Seward, F. [Abstract] "Observations of X-Ray Sources in M31 with the Einstein Observatory." *Bulletin of the American Physical Society* 24(1979):640.
- Van Speybroeck, L.; Epstein, A.; Forman, W.; Giacconi, R.; Jones, C.; Liller, W.; and Smarr, L. "Observations of X-Ray Sources in M31." *Astrophysical Journal (Letters)* 234(1979):L45-L49.
- Vernazza, J. E., and Raymond, J. C. "On the Ionization Balance Equilibrium." *Astrophysical Journal (Letters)* 228(1979):L89.
- Victor, G. A., and Laughlin, C. "Intercombination Line Oscillator Strengths for the MgI Isoelectronic Sequence." *Astrophysical Journal* 234(1979):407-9.
- Waller, W. H. "Eclipse at Japal-Rangapur Observatory." *Star and Sky* 2(1980):23-25.
- Weekes, T. C. "Constraints on Point Source Neutrino-Astronomy from Very High Energy Gamma Ray Observations." *Proceedings of the 1978 DUMAND Summer Workshop*, vol. 2, ed. A. Roberts, p. 313. La Jolla, California, 1979.
- Weekes, T. C.; Helmken, H. F.; and Grindlay, J. E. "The Mt. Hopkins Sky Survey for Gamma Rays of Energy 100-1000 GeV III: Galactic Plane and Extended Sources." In *Proceedings of the Sixteenth International Cosmic Ray Conference, Kyoto, Japan*, vol. 1, pp. 132-37, 1979.
- Weekes, T. C.; Helmken, H. F.; and L'Heureux, J. "The Mt. Hopkins Sky Survey for Gamma Rays of Energy 100-1000 GeV II: Point Sources." In *Proceedings of the Sixteenth International Cosmic Ray Conference, Kyoto, Japan*, vol. 1, p. 126, 1979.
- Weinberg, S. "Baryon and Lepton Nonconserving Processes." *Physical Review Letters* 43(1979):1566.
- . "Beyond the First Three Minutes. Closing Talk at the Conference on the Universe at Large Redshifts, Copenhagen, June 1979." *Physica Scripta* 21(1979):773.
- . "Cosmological Production of Baryons." *Physical Review Letters* 42(1979):850.
- . "Effective Gauge Theories." *Physics Letters* 91B(1980):51.
- . "Einstein and Spacetime: Then and Now." *Bulletin of the American Academy of Arts and Sciences* 33(1979):35.
- . "Gauge Hierarchies." *Physics Letters* 82B(1979):387.
- . "Implications of Dynamical Symmetry Breaking: An Addendum." *Physical Review D* 19(1979):1277.
- . "Phenomenological Lagrangians." *Physics* 96A(1979):327; also in



- Themes in Contemporary Physics*, ed. S. Deser et al. Amsterdam: North Holland Publishing Company, 1979.
- . "Ultraviolet Divergences in Quantum Theories of Gravitation, Contribution to the Einstein Centenary Volume." In *General Relativity*, eds. S. W. Hawking and W. Israel, p. 790. England: Cambridge University Press, 1979.
- Weisskopf, M. C.; Darbro, W.; Elsner, R. F.; Ghosh, P.; Sutherland, P. G.; and Grindlay, J. E. [Abstract] "Observations of 4U1626-67 with the Monitor Proportional Counter on the Einstein (HEAO-2) Observatory." *Bulletin of the American Astronomical Society* 11(1980):773.
- Weymann, R.; Chaffee, F., Jr.; Davis, M.; Carleton, N. P.; Walsh, D.; and Carswell, R. "Multiple Mirror Telescope Observations of the QSOs 0957+561 A,B." *Astrophysical Journal* 233(1979):L43-L46.
- Whipple, F. L. "Reminiscences of the Space Age." *Galileo* II(1979):17-18.
- . "Structure on the Cometary Nucleus. Experimental Approaches to Comets." *Contribution No. 361, Lunar and Planetary Institute, Houston, Texas*, p. 5, 1979.
- . "The Spin of Comets." *Scientific American* 242(1980):88-96.
- Whipple, F. L., and Sekanina, Z. "Comet Encke: Precession of the Spin Axis, Nongravitational Motion, and Sublimation." *Astronomical Journal* 84(1979):1894-1909.
- Whitaker, R. W., and Kurucz, R. L. [Abstract] "Theoretical Colors for Helium Rich Cepheids." *Bulletin of the American Astronomical Society* 11(1979):438.
- Willis, A. J.; Wilson, R.; Vanden Bout, P.; Sanner, F.; Black, J.; Davis, R. J.; Dupree, A. K.; Gursky, H.; Hartmann, L.; Matilsky, T.; Burger, M.; de Loore, C.; van Dessel, E. L.; Whitelock, P.; Menzies, J.; Sanford, P.; Pollard, G.; and Sandford, M. C. W. "IUE Ultraviolet and Complementary Visible and X-Ray Observations of SCO X-1." In *The First Year of IUE*, pp. 291-304. London, England: University College London, 1979.
- Willis, A. J.; Wilson, R.; Vanden Bout, P.; Sanner, F.; Black, J.; Davis, R. J.; Dupree, A. K.; Gursky, H.; Hartmann, L.; Raymond, J.; Matilsky, T.; Burger, M.; de Loore, C.; van Dessel, E. L.; Whitelock, P.; Menzies, J.; Meikle, W. P. S.; Joseph, R. D.; Sanford, P.; Pollard, G.; and Sandford, M. C. W. "Ultraviolet, Visible, Infrared, and X-Ray Observations of SCO X-1." *Astrophysical Journal* 237(1980):596-612.
- Wilson, T.; Fazio, G.; Jaffee, D.; Kleinmann, D. E.; Wright, E.; and Low, F. "A Comparison of High Resolution Radio and Far-Infrared Maps of M17." *Astronomy and Astrophysics* 76(1979):86-91.
- Zamorani, G.; Elvis, M.; Fabbiano, G.; Feigelson, E.; Giacconi, R.; Grindlay, J.; Henry, J. P.; Maccacaro, T.; Murray, S.; Schwartz, S. A.; Soltan, A.; Steiner, J.; and Tananbaum, H. [Abstract] "X-Ray Properties of QSO's from Einstein Observations." *Bulletin of the American Astronomical Society* 11(1980):776.
- Zombeck, M. "High Energy Astrophysics Handbook." *Smithsonian Astrophysical Observatory Special Report No. 386*, 1980.

#### SMITHSONIAN TROPICAL RESEARCH INSTITUTE

- Ackerman, James D., and Mesler, Michael R. "Pollination Biology of *Listera cordata* (Orchidaceae)." *American Journal of Botany* 66(3)(1979):820-24.
- Aiello, Annette. "Life History and Behavior of the Case-bearer *Phereoca allutella* (Lepidoptera: Tineidae)." *Psyche* 86(2-3)(1979):125-36.
- Andrews, Robin M. "Reproductive Effort of Female *Anolis limifrons* (Sauria: Iguanidae)." *Copeia* 3(1979):620-26.
- Augspurger, Carol K. "Irregular Rain Cues and the Germination and Seedling Survival of a Panamanian Shrub (*Hybanthus prunifolius*)." *Oecologia* 44(1)(1979):53-59.

- . "Mass-flowering of a Tropical Shrub (*Hybanthus prunifolius*): Influence on Pollinator Attraction and Movement." *Evolution* 34(3)(1980): 475–88.
- Baker, Curtis L. "Jamming Avoidance Behavior in Gymnotoid Electric Fish with Pulse-type Discharges: Sensory Encoding for a Temporal Pattern Discrimination." *Journal of Comparative Physiology*—[A] 136(2)(1980):165–81.
- Bonaccorso, Frank J. "Foraging and Reproductive Ecology in a Panamanian Bat Community." *Bulletin of the Florida State Museum, Biological Sciences* 24(4)(1979):359–408.
- Boyden, Thomas C. "Floral Mimicry by *Epidendrum ibaguense* (Orchidaceae) in Panama." *Evolution* 34(1)(1980):135–36.
- Buss, Leo W. "Bryozoan Overgrowth Interactions—The Interdependence of Competition for Space and Food." *Nature* 281(5731)(1979):475–77.
- Caldwell, Roy L. "A Unique Form of Locomotion in a Stomatopod—Backward Somersaulting." *Nature* 282(5734)(1979):71–73.
- Chacón, Patricia, and Eberhard, William G. "Factors Affecting Number and Kinds of Prey Caught in Artificial Spider Webs, with Considerations of How Orb Webs Trap Prey." *Bulletin of the British Arachnological Society* 5(1)(1980):29–38.
- Coley, Phyllis D. "Effects of Leaf Age and Plant Life History Patterns on Herbivory." *Nature* 285(5756)(1980):545–46.
- Cubit, John. "Heteromorphic Life Histories of Certain Marine Algae as Adaptations to Variation in Herbivory." *Ecology* 61(1980):524–36.
- De Steven, Diane. "Clutch Size, Breeding Success, and Parental Survival in the Tree Swallow (*Iridoprocne bicolor*)." *Evolution* 34(2)(1980):278–91.
- Dressler, Robert L. "Una *Sievekingia* llamativa de Panamá." *Orquideologia* 13(3)(1979):221–24.
- . "An Attractive New *Sievekingia* from Panama." *Orquideologia* 13(3)(1979): 224–28.
- . "Una *Vanilla* notable de Panamá." *Orquideologia* 13(3)(1979):229–31.
- . "A Noteworthy *Vanilla* from Panama." *Orquideologia* 13(3)(1979): 231–32.
- . "Una nueva *Hexisea* distintiva de Panama: *Hexisea arctata* Dressler." *Orquidea* (Méx.) 7(3)(1979):215–21.
- . "A Distinctive New *Hexisea* from Panama: *Hexisea arctata* Dressler." *Orquidea* (Méx.) 7(3)(1979):222–25.
- . "Una enorme *Scaphyglottis* del occidente de Panama: *Scaphyglottis gigantea* Dressler, sp. nov." *Orquidea* (Méx.) 7(3)(1979):227–31.
- . "A Huge *Scaphyglottis* from Western Panama: *Scaphyglottis gigantea* Dressler, sp. nov." *Orquidea* (Méx.) 7(3)(1979):231–34.
- . "*Salpistele*, a new genus of the Pleurothallidinae." *Orquideologia* 14(1)(1979):11–17.
- . "*Salpistele*, un género nuevo de las Pleurothallidinae." *Orquideologia* 14(1)(1979):3–10.
- . "The Subfamilies of the Orchidaceae." *Selbyana* 5(2)(1979):197–206.
- Eberhard, William G. "Rates of Egg Production by Tropical Spiders in the Field." *Biotropica* 11(4)(1979):292–300.
- . "Horned Beetles." *Scientific American* 242(3)(1980):166–82.
- Eberhard, William G., and Lahmann, E. "Factores selectivos que afectan la tendencia a agruparse en la araña colonial *Philoponella simiplumosa* (Araneae: Uloboridae). *Revista de Biología Tropical* 27(2)(1979):231–40.
- Fischer, Eric A. "The Relationship Between Mating System and Simultaneous Hermaphroditism in the Coral Reef Fish, *Hypoplectrus nigricans* (Serranidae)." *Animal Behaviour* 28(2)(1980):620–33.
- Fisk, Frank W., and Wolda, Henk. "Keys to the Cockroaches of Central Panama. Part I: Flying Species. *Studies on Neotropical Fauna and Environment* 14(4)(1979):177–201.



- Garwood, Nancy. "Seed Germination in a Seasonal Tropical Forest in Panama." Ph.D. thesis, University of Chicago, 1979.
- Garwood, Nancy C.; Janos, David P.; and Brokaw, Nicholas. "Earthquake-caused Landslides: A Major Disturbance to Tropical Forests." *Science* 205 (4410)(1979):997-99.
- Gradwohl, Judy, and Greenberg, Russell. "The Formation of Antwren Flocks on Barro Colorado Island, Panama." *The Auk* 97(2)(1980):385-95.
- Graves, John E., and Rosenblatt, Richard H. "Genetic Relationships of the Color Morphs of the Serranid Fish *Hypoplectrus unicolor*." *Evolution* 34(2) (1980):240-45.
- Heck, Kenneth L., Jr. "Some Determinants of the Composition and Abundance of Motile Macroinvertebrate Species in Tropical and Temperate Turtlegrass (*Thalassia testudinum*) Meadows." *Journal of Biogeography* 6(2)(1979): 138-200.
- Hendler, Gordon. "Reproductive Periodicity of Ophiuroids (Echinodermata: Ophiuroidea) on the Atlantic and Pacific Coasts of Panama." In *Reproductive Ecology of Marine Invertebrates*, ed. Stephen E. Stancyk, pp. 145-56. Columbia, S.C.: University of South Carolina Press, 1979.
- . "Sex-reversal and Viviparity in *Ophiolepis kieri*, n.s., with Notes on Viviparous Brittlestars from the Caribbean (Echinodermata: Ophiuroidea)." In *Proceedings of the Biological Society of Washington* 92(4)(1979):783-95.
- Highsmith, Raymond C. "Geographic Patterns of Coral Bioerosion: A Productivity Hypothesis." *Journal of Experimental Marine Biology* 46(1980):177-96.
- Howe, Henry F. "Evolutionary Aspects of Parental Care in the Common Grackle, *Quiscalus quiscula* L." *Evolution* 33(1)(1979):41-51.
- . "Fear and Frugivory." *American Naturalist* 114(6)(1979):925-31.
- Jaslow, Alan P. "Vocalization and Aggression in *Atelopus chiriquiensis* (Amphibia, Anura, Bufonidae)." *Journal of Herpetology* 13(2)(1979):141-45.
- Karr, James R. "Geographical Variation in the Avifaunas of Tropical Forest Undergrowth." *The Auk* 97(2)(1980):283-98.
- Kiester, A. Ross. "Conspecifics as Cues: A Mechanism for Habitat Selection in the Panamanian Grass Anole (*Anolis aeneus*)." *Behavioral Ecology and Sociobiology* 5(4)(1979):323-30.
- Kimsey, Lynn Siri. "An Illustrated Key to the Genus *Exaerete* with Descriptions of Male Genitalia and Biology (Hymenoptera: Euglossini, Apidae)." *Journal of the Kansas Entomological Society* 52(4)(1979):735-46.
- Lang, Gerald E., and Knight, Dennis H. "Decay Rates for Boles of Tropical Trees in Panama." *Biotropica* 11(4)(1979):316-1317.
- Linnavouri, Rauno E., and DeLong, Dwight M. "New or Little Known Agallinae from Central America (Homoptera: Cicadellidae)." *Journal of the Kansas Entomological Society* 52(2)(1979):405-11.
- Lubin, Yael D. "The Predatory Behavior of *Cyrtophora* (Araneae: Araneidae)." *Journal of Arachnology* 8(1980):159-85.
- May, Michael L. "Energy Metabolism of Dragonflies (Odonata: Anisoptera) at Rest and During Endothermic Warm-up." *Journal of Experimental Biology* 83(1979):79-94.
- . "Lista preliminar de nombre y clave para identificar los Odonata (Caballitos) de la Isla de Barro Colorado." *Cuadernos de Ciencias* 1(1979).
- . "Temporal Activity Patterns of *Micrathyria* in Central America (Anisoptera: Libellulidae)." *Odonatologica* 9(1)(1980):57-74.
- Milton, Katharine. "Factors Influencing Leaf Choice by Howler Monkeys: A Test of Some Hypotheses of Food Selection by Generalist Herbivores." *The American Naturalist* 114(3)(1979):362-78.
- Morrison, Douglas W. "Apparent Male Defense of Tree Hollows in the Fruit Bat, *Artibeus jamaicensis*." *Journal of Mammalogy* 60(1)(1979):11-15.
- . "Efficiency of Food Utilization by Fruit Bats." *Oecologia* 45(1980): 270-73.



- . "Foraging and Day-roosting Dynamics of Canopy Fruit Bats in Panama." *Journal of Mammalogy* 61(1)(1980):20–29.
- Moynihan, Martin. "Geographic Variation in Social Behavior and in Adaptations to Competition Among Andean Birds." *Nuttall Ornithological Club*, No. 18, Museum of Comparative Zoology, Harvard University (1979).
- Nagy, Kenneth A., and Milton, Katharine. "Energy Metabolism and Food Consumption by Wild Howler Monkeys (*Alouatta palliata*)." *Ecology* 60(3) (1979):475–80.
- Palmer, A. Richard. "Fish Predation and the Evolution of Gastropod Shell Sculpture: Experimental and Geographic Evidence." *Evolution* 33(2)(1979): 697–713.
- Platnick, Norman I., and Shadab, Mohammad U. "A Review of the Spider Genera *Anapisona* and *Pseudanapis* (Araneae, Anapidae)." *American Museum Novitates* 2672(1979):1–20.
- Ricklefs, Robert L. "'Watch-dog' Behaviour Observed at the Nest of a Cooperative Breeding Bird, the Rufous-margined Flycatcher *Myiozetetes cayanensis*." *The Ibis* 122(1)(1980):116–18.
- Robertson, D. Ross, and Lassig, Brian. "Spatial Distribution Patterns and Coexistence of a Group of Territorial Damselfishes from the Great Barrier Reef." *Bulletin of Marine Sciences* 30(1980):187–203.
- Robertson, D. Ross, and Sheldon, Janice M. "Competitive Interactions and the Availability of Sleeping Sites for a Diurnal Coral Reef Fish." *Journal of Experimental Marine Biology and Ecology* 40(3)(1979):285–98.
- Robinson, Barbara, and Robinson, Michael H. "Live History and Behavior Studies of *Isopoda goliath* from New Guinea." In *Eighth International Arachnology Congress*, Wien, West Germany (1980), pp. 261–66.
- Robinson, Michael H. "The Ecology and Behavior of Tropical Spiders." In *Eighth International Arachnology Congress*, Wien, West Germany (1980), pp. 13–32.
- Robinson, Michael H., and Lubin, Yael D. "Specialists and Generalists: The Ecology and Behavior of Some Web-building Spiders from Papua New Guinea. I. *Herennia ornatissima*, *Argiope ocyaloides* and *Arachnura melanura* (Araneae: Araneidae)." *Pacific Insects* 21(2–3)(1979):97–132.
- . "Specialists and Generalists: The Ecology and Behavior of Some Web-building Spiders from Papua New Guinea. II. *Psechrus argentatus* and *Fecenia* sp. (Araneae: Psechridae)." *Pacific Insects* 21(2–3)(1979):133–64.
- Robinson, Michael H., and Robinson, Barbara. "Comparative Studies of the Courtship and Mating Behavior of Tropical Araneid Spiders." *Pacific Insects Monograph* 36(1980):218.
- Roubik, David W. "Nest and Colony Characteristics of Stingless Bees from French Guiana (Hymenoptera: Apidae)." *Journal of the Kansas Entomological Society* 52(3)(1979):443–70.
- . "Foraging Behavior of Competing Africanized Honeybees and Stingless Bees." *Ecology* 61(4)(1980):747–57.
- Roubik, David W., and Michener, Charles D. "The Seasonal Cycle and Nests of *Epicharis zonata*, a Bee Whose Cells are Below the Wet-season Water Table (Hymenoptera, Anthophoridae)." *Biotropica* 12(1)(1980):56–60.
- Russell, James Knox. "Reciprocity in the Social Behavior of Coatis (*Nasua narica*)." Ph.D. thesis, University of North Carolina, Chapel Hill, 1979.
- Ryan, Michael J. "Female Mate Choice in a Neotropical Frog." *Science* 209 (1980):523–25.
- Schemske, Douglas W. "Evolution of Floral Display in the Orchid *Brassavola nodosa*." *Evolution* 34(3)(1980):489–93.
- Silberglie, Robert E. "Communication in the Ultraviolet." *Annual Review of Ecology and Systematics* 10(1979):373–98.
- Silberglie, Robert E., and Aiello, Annette. "Camouflage by Intergumentary Wetting in Bark Bugs." *Science* 207(4432)(1980):773–75.

- Silberglied, Robert E.; Aiello, Annette; and Lamas, Gerardo. "Neotropical Butterflies of the Genus *Anartia*: Systematics, Life Histories, and General Biology (Lepidoptera: Nymphalidae)." *Psyche* 86(2-3)(1980):219-60.
- Silberglied, Robert E.; Aiello, Annette; and Windsor, Donald M. "Disruptive Coloration in Butterflies: Lack of Support in *Anartia fatima*." *Science* 209 (1980):617-19.
- Smith, Alan P. "The Paradox of Autotoxicity in Plants." *Evolutionary Theory* 4(4)(1979):173-80.
- Smith, Neal G. "Hawk and Vulture Migrations through the Isthmus of Panama." In *Migrant Birds in the Neotropics: Ecology, Behavior, Distribution and Conservation*, eds. A. Keast and E. S. Morton, pp. 51-65. Washington, D.C.: Smithsonian Institution Press, 1980.
- . "Some Evolutionary, Ecological, and Behavioral Correlates of Communal Nesting by Birds with Wasps or Bees. *Proceedings of the Seventeenth Ornithological Congress*, pp. 214-34, (1980).
- Toft, Catherine A., and Levings, Sally C. "Tendencias Estacionales Relacionadas con las Poblaciones de Artropodos en la Hojarasca. *Atlas del IV Symposium Internacional de Ecologia Tropical*, no. 3, 1980.
- Vollrath, Fritz. "Vibrations: Their Signal Function for a Spider Kleptoparasite." *Science* 205(4411)(1979):1149-51.
- Waldner, Raymond E., and Robertson, D. Ross. "Patterns of Habitat Partitioning by Eight Species of Territorial Caribbean Damsel Fishes (Pisces: Pomacentridae)." *Bulletin of Marine Science* 30(1980):171-86.
- Warner, Robert R., and Hoffman, Steven G. "Local Population Size as a Determinant of Mating System and Sexual Composition in Two Tropical Marine Fishes (*Thalassoma* spp.)." *Evolution* 34(3)(1980):508-18.
- Wells, Kentwood D. "Reproductive Behavior and Male Mating Success in a Neotropical Toad, *Bufo typhonius*." *Biotropica* 11(4)(1979):301-7.
- . "Behavioral Ecology and Social Organization of a Dendrobatid Frog (*Colostethus inguinalis*)." *Behavioral Ecology and Sociobiology* 6(3)(1980):199-209.
- West-Eberhard, Mary Jane. "Sexual Selection, Social Competition, and Evolution." *Proceedings of the American Philosophical Society* 123(4)(1979):222-34.
- Willis, Edwin O., and Eisenmann, Eugene. "A Revised List of Birds of Barro Colorado Island, Panama." *Smithsonian Contributions to Zoology* 291. Washington, D.C.: Smithsonian Institution Press, 1979.
- Windsor, Donald M. "Seasonality and the Nesting Cycles of Tropical Polistine Wasps." *Atlas del IV Symposium Internacional de Ecologia Tropical*, no. 3, 1980.
- Wolda, Henk. "*Zunacetha annulata* (Lep: Diopitidae), an Outbreak Insect in a Neotropical Forest." In *Proceedings of the Third Symposium on Tropical Ecology, Lubumbashi, Zaire, 1979. Geo-Eco-Trop.* 2(1979):443-54.
- . "Abundance and Diversity of Homoptera in the Canopy of a Tropical Forest." *Journal of Ecological Entomology* 4(1979):181-90.
- . "Fluctuaciones en la abundancia de insectos en el bosque tropical." *Actas del IV Symposium Internacional de Ecología Tropical*, Panama, no. 3, 1979, pp. 519-39.
- . "Seasonality Parameters for Insect Populations." *Researches on Population Ecology* 20(1979):247-56.
- . "Fluctuaciones estacionales de insectos en el tropico: Sphingidae." *Memorias del VI Congreso de la Sociedad Colombiana de Entomología, "Socolen,"* (1979):11-58.
- . "Seasonality of Tropical Insects. I. Leafhoppers (Homoptera) in Las Cumbres, Panama." *Journal of Animal Ecology* 49(1)(1980):277-90.
- . "Fluctuaciones estacionales: Insectos es Horncitos (Fortuna, Provincia de Chiriquí). *ConCiencia* 7(1980):8-10.



- Wright, Stuart Joseph. "Competition Between Insectivorous Lizards and Birds in Central Panama." *American Zoologist* 19(1979):1145-56.
- Wulff, Janie L., and Buss, Leo W. "Do Sponges Help Hold Coral Reefs Together?" *Nature* 281(5731)(1979):474-75.
- Zucker, Naida, and Denny, Rita. "Interspecific Communication in Fiddler Crabs: Preliminary Report of a Female Rejection Display Directed toward Courting Heterospecific Males." *Zeitschrift für Tierpsychologie* 50(1)(1979): 9-17.

## HISTORY AND ART

### ARCHIVES OF AMERICAN ART

- Karlstrom, Paul. "Report, 1976-78: Archives of American Art, Smithsonian Institution." In *The Fine Arts Museums of San Francisco*, p. 69.
- . [Catalogue essay] *The United States and the Impressionist Era*. San Jose, Calif.: San Jose Museum of Art, 1979.
- McNaught, William. "Studios of 19th Century American Artists." *Horizon* 23(2)(February 1980).

### COOPER-HEWITT MUSEUM

- Dee, Elaine Evans. *Idee und Anspruch der Architektur*. Cologne, Germany: Wallraf-Richartz Museum, 1980.
- McFadden, David Revere. "Decorative Arts at Cooper-Hewitt." *Antiques* (Winter 1979).
- . *Glass in the Collection of the Cooper-Hewitt Museum*. New York, 1979.
- . *Furniture in the Collection of the Cooper-Hewitt Museum*. New York, 1979.
- . [Catalogue essay] *Hair*. New York, 1980.
- . *Tiles in the Collection of the Cooper-Hewitt Museum*. New York, 1980.
- Oliver, Richard B. *The Oceanliner: Speed, Style, Symbol*. New York, 1980.
- Taylor, Lisa. [Foreword] *Furniture in the Collection of the Cooper-Hewitt Museum*. New York, 1979.
- . [Foreword] *Glass in the Collection of the Cooper-Hewitt Museum*. New York, 1979.
- . [Foreword] *Cooper-Hewitt Benefit Auction Catalogue*. New York, 1980.
- . [Foreword] *Hair*. New York, 1980.
- . [Foreword] *The Oceanliner: Speed, Style, Symbol*. New York, 1980.
- . [Foreword] *Tiles in the Collection of the Cooper-Hewitt Museum*. New York, 1980.
- . [Foreword] *Tsuba and Japanese Sword Fittings in the Collection of the Cooper-Hewitt Museum*. New York, 1980.
- . "Notes from the Director." *Cooper-Hewitt Newsletter* (Fall, Winter, and Spring, 1980).

### FREER GALLERY OF ART

- Ars Orientalis*, vol. 11. Ann Arbor, Mich.: University of Michigan, 1979.
- Chase, W. Thomas, III. "Solid Samples from Metallic Antiquities and Their Examination." In *International Symposium on the Conservation and Restoration of Cultural Property—Cultural Property and Analytical Chemistry*, November 27-30, Tokyo and Tsukuba, Japan, eds. Organizing Committee of the Symposium, pp. 73-109. Tokyo: Tokyo National Research Institute of Cultural Properties, 1979.



- . "The Conservation of a Plastic Mask by Marisol." *Journal of the American Institute for Conservation*, 18(1979):82–94.
- Fu Shen. "The Hsüan-Wen Ko and The Tuan-pen T'ang—A History of the Yüan Imperial Art Collection, Part 3." *The National Palace Museum Quarterly* 13(3).
- . "Mi Shu Chien—The Yüan Imperial Archives—A History of the Yüan Imperial Art Collection, Part 4." *The National Palace Museum Quarterly* 13(4).
- Fu Shen; Murray, Julia; and Hongnam Kim. *Contemporary Calligraphy and Painting from the Republic of China*. Washington, D.C.: Consortium for International Cooperation in Higher Education, 1980.
- Shimizu, Yoshiaki. "Ink Painting," ed. Shujiro Shimada. In *Zaigai Nihon no shihō (Japanese Art Treasures Abroad)*, vol. 3. Essays for entries 4–6, 9–11, 15–17, 59, and 86. Tokyo: Mainichi Shinbun-sha, 1980.
- . "Sliding Doors and Screens," ed. Tsuneo Takeda. In *Zaigai Nihon no shihō*, vol. 4. [Essays for entries 40, 41, 70, 71, 90, and 91] Tokyo: Mainichi Shinbun-sha, 1980.
- . "Literati Paintings and Other Schools," ed. Nobuo Tsuji. In *Zaigai Nihon no shihō*, vol. 6. [Essays for entries 36 and 41] Tokyo: Mainichi Shinbun-sha, 1980.
- . "Muromachi Ink Paintings," ed. Eiji Akazawa. In *Asahi Weekly Encyclopedia*, series no. 115 [12 commentaries to illustrations] 1980.
- . "Sesshū and Sesson," ed. Eiji Akazawa. In *Asahi Weekly Encyclopedia*, series no. 116 [12 commentaries to illustrations and an article "Muromachi Paintings and Their Ambience in America."] 1980.
- . "Six Narrative Paintings of Yin T'o'lo: Their Symbolic Content." In *Archives of Asian Art*, 33. Cambridge, Mass.: Fogg Art Museum, Harvard University, 1980.
- Yonemura, Ann. "Kako Genzai Inga-kyo (Shoriji version)." In *Zaigai Nihon no shihō (Japanese Art Treasures Abroad)*, vol. 22, p. 147. Tokyo: Mainichi Shinbun-sha, 1980.
- . "Yatader Engi Emaki." In *Zaigai Nihon no shihō*, vol. 22, p. 154. Tokyo: Mainichi Shinbun-sha, 1980.
- Zycherman, Lynda A., and Veloz, Nicolas F., Jr. "Conservation of a Monumental Outdoor Bronze Sculpture: Theodore Roosevelt by Paulanship." *Journal of the American Institute for Conservation* 19(1980):24–33.

#### HIRSHHORN MUSEUM AND SCULPTURE GARDEN

- Fletcher, Valerie. "The Sun's Light: Romanticism through Post-Impressionism." In *The Sun*. Washington, D.C.: Smithsonian Exposition Books, 1980.
- Fox, Howard. *Fifteen National Print Exhibition*. Potsdam, N.Y.: Brainerd Art Gallery, State University College, 1980.
- . "Grace Under Pressure: Loren Madsen's Brick Constructions." In *Loren Madsen*. Dayton, Ohio: Wright State University, 1980.
- . "The New Imagery." In *Drawings: The Pluralist Decade*, ed. Janet Kardon. Philadelphia, Penn.: Institute of Contemporary Art, University of Pennsylvania, 1980.
- . *Stacking/Rigging/Binding: 10 Contemporary Sculptors*. Washington, D.C.: Washington Project for the Arts, 1980.
- Gettings, Frank. "The Human Landscape: Subjective Symbolism in Oscar Bluemner's Painting." *Journal of the Archives of American Art* 19(3).
- Millard, Charles. *Miró: Selected Paintings*. Washington, D.C.: Smithsonian Institution Press, 1980.
- . "Chardin." *Hudson Review* (Spring 1980):91–96.

- . "Edgar Hilaire Germain Degas." In *The Romantics to Rodin*. Los Angeles, Calif.: Los Angeles County Museum of Art, 1980.
- . "Louis Desprez." In *The Romantics to Rodin*. Los Angeles, Calif.: Los Angeles County Museum of Art, 1980.
- . "Antoine-Augustin Préault." In *The Romantics to Rodin*. Los Angeles, Calif.: Los Angeles County Museum of Art, 1980.
- Rosenzweig, Phyllis. *The Fifties: Aspects of Painting in New York*. Washington, D.C.: Smithsonian Institution Press, 1980.
- Shannon, Joe. *Edwin Dickenson: Selected Landscapes*. Washington, D.C.: Smithsonian Institution Press, 1980.
- Weil, Stephen E. "The 'Moral Right' Comes to California." *Art News* (December 1979):88-94.
- Zilczer, Judith. *Oscar Bluemner: The Hirshhorn Museum and Sculpture Garden Collection*. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Oscar Bluemner's Expressionist Landscape Drawings." *Drawing* 1(4) (November-December 1979):73-76.
- . "Raymond Duchamp-Villon: Pioneer of Modern Sculpture." *Philadelphia Museum of Art Bulletin* (Fall 1980):1-24.

#### JOSEPH HENRY PAPERS

- Nathan Reingold. [In Chinese translation] "Reflections on 200 years of Science in the United States." *Guowai Shehui Kexue* (Social Sciences Abroad) 5(1980): 16-29.
- . Introduction to *The Chequered Career of Ferdinand Rudolph Hassler*, by Florian Cajori. New York: Arno Press, 1980.

#### NATIONAL COLLECTION OF FINE ARTS

- Breeskin, Adelyn D. *Mary Cassatt: A Catalogue Raisonné of the Graphic Work*. Washington, D.C.: Smithsonian Institution Press, 1979.
- . *Romaine Brooks (1874-1970)*. Washington, D.C.: Smithsonian Institution Press, 1980.
- . *William H. Johnson (1901-1970)*. Washington, D.C.: Smithsonian Institution Press, 1980.
- Fink, Eleanor E. "Subject Access to Reproductions of American Works of Art." In *Proceedings of the Conference on Data Bases in the Humanities and Social Sciences*. Amsterdam: North-Holland Publishing Company, 1980.
- Foresta, Merry A. "Matulka and the Modern Movement." In *Jan Matulka, 1890-1972*. Published for the National Collection of Fine Arts and the Whitney Museum of American Art. Washington, D.C.: Smithsonian Institution Press, 1980.
- . *George Tooker*. Los Angeles, Calif.: David Tunkl Gallery, 1980.
- Flint, Janet A. *Prints for the People: Selections from New Deal Graphics Projects*. Washington, D.C.: Smithsonian Institution Press, 1979.
- . "Matulka as Printmaker: A Checklist of Known Prints." In *Jan Matulka, 1890-1972*. Published for the National Collection of Fine Arts and the Whitney Museum of American Art. Washington, D.C.: Smithsonian Institution Press, 1980.
- Mecklenburg, Virginia M. *John R. Grabach: Seventy Years an Artist*. Washington, D.C.: Smithsonian Institution Press, 1980.
- . Annotated checklist in *Across the Nation: Fine Art for Federal Buildings, 1972-1979*. Washington, D.C.: Smithsonian Institution Press, 1980.
- . "Milton Avery, *Spring Orchard*." *The Museologist* (Spring 1980).
- . *The Public As Patron*. College Park, Md.: University of Maryland Department of Art, 1979.



- Norelli, Martina R. *Birds: Works from the 1979 Annual Exhibition of Art Depicting Birds*. Washington, D.C.: Smithsonian Institution Press, 1980.
- . "Leningrad" and "Moscow." In *Europe 1980*. New York: Houghton Mifflin, 1979.
- Rand, Harry. Introduction to *Burgoyne Diller*. New York and Houston: Meredith Long Contemporary, 1980.
- . "The Watercolors of Val Lewton." *Arts Magazine* (May 1980).
- . "Making Certain Distinctions." *Art Center (Louisville) Newsletter*. (September 1980).
- . *New York School* by Irving Sandler. *Leonardo* (Paris), (Winter 1980).
- . "Notes on the Jackson Pollock Catalogue Raisonné, by O'Connor and Thaw." *Leonardo* (Paris), (Winter 1980).
- . "Barnett Newman by Harold Rosenberg." *Leonardo* (Paris), (Spring 1980).
- Taylor, Joshua C. "After the Crash: Art and the Depression." *Smithsonian Magazine* (October 1979).
- . Introduction to *Across the Nation: Fine Art for Federal Buildings, 1972–1979*. Washington, D.C.: Smithsonian Institution Press, 1980.
- . Foreword to *The Drawings of Morris Louis*. Washington, D.C.: Smithsonian Institution Press, 1979.
- . Foreword to *Hugo Robus (1885–1964)*. Washington, D.C.: Smithsonian Institution Press, 1980.
- . Foreword to *Jan Matulka, 1890–1972*. Washington, D.C.: Smithsonian Institution Press, 1980.

#### RENWICK GALLERY OF THE NATIONAL COLLECTION OF FINE ARTS

- Herman, Lloyd E. "Irena Brynner: Jewelry Since 1953." *Goldsmiths Journal*. (October 1979).
- Vileisis, Birute A. *Painting and Sculpture in the Grand Salon and Octagon Room*. Washington, D.C.: Smithsonian Institution Press, 1980.

#### NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY

##### Department of Social and National History

- Ahlborn, Richard, editor. "Early Saddles of Western North America." *Smithsonian Studies in History and Technology* 39. Washington, D.C.: Smithsonian Institution Press, 1980.
- Collins, Herbert R. *Threads of History: Americana Recorded on Cloth, 1775 to the Present*. Washington, D.C.: Smithsonian Institution Press, 1979.
- Fesperman, John. *Organs in Mexico*. [Photographs by Scott Odell] Raleigh, N.C.: Sunbury Press, 1980.
- Germann, Sheridan. "'Mrs. Crawley's Couchet' Reconsidered." *Early Music Magazine* 7(1979).
- . "Monsieur Doublet and His Confreres: The Harpsichord Decorators in Paris." *Early Music Magazine* 7(1979).
- . "Regional Schools of Harpsichord Decoration." *American Musical Instrument Society Journal* 4(1978). [Publication actually published January 1980.]
- Hoover, Cynthia A. "The Phonograph and Museums." In *The Phonograph and Our Musical Life*, ed. H. Wiley Hitchcock, pp. 77–84. Proceedings of a Centennial Conference, December 7–10, 1977. Brooklyn, N.Y.: Institute for Studies in American Music, 1980.
- Kidwell, Claudia B. "Cutting A Fashionable Fit: Dressmakers' Drafting Systems in the United States." *Smithsonian Studies in History and Technology* 42. Washington, D.C.: Smithsonian Institution Press, 1979.
- Klapthor, Margaret B. "Private Lives." *Every Four Years*. Smithsonian Exposition Books. New York: W. W. Norton & Company, 1979.



- . "Silver Tray Presented to Dr. Benjamin Rush." *Washington Antiques Show Catalog*, 1980.
- . "George Washington Silver Camp Cup." *Washington Antiques Show Catalog*, 1980.
- Kulik, Gary B. "The Beginnings of the Industrial Revolution in America, Pawtucket, Rhode Island, 1672–1829." Ph.D. dissertation, Brown University, 1980.
- Murray, Anne W. "George Washington's Apparel." *Antiques* 118 (July 1980): 120–125.
- Myers, Susan H. *Handcraft to Industry: Philadelphia Ceramics in the First Half of the Nineteenth Century*. Washington, D.C.: Smithsonian Institution Press, 1980.
- . "Firebricks to Porcelain: Philadelphia Ceramics 1800–1850." *American Ceramics Circle Bulletin* 2:37–62.

*Department of the History of Science and Technology*

- Davis, Audrey B. "Treasures of the Smithsonian." *Physicians East* (1980):17–20.
- Davis, Audrey B., and Appel, Toby. "Bloodletting Instruments in the National Museum of History and Technology." *Smithsonian Studies in History and Technology* 41. Washington, D.C.: Smithsonian Institution Press, 1979.
- Finn, Bernard S. "Thermoelectricity." *Advances in Electronics and Physics* 50(1980):175–240.
- Forman, Paul. "Kausalität, Anschaulichkeit e Individualität; ovvero, come i valori culturali prescissero il carattere e gli insegnamenti attribuiti alla meccanica quantistica." In *Fisica e societa negli anni '20*, pp. 15–34. Milano: CLUP-CLUED, 1980.
- Hindle, Brooke. "Water Supply Systems in Early America." In *Technology and Its Impact on Society*, pp. 131–41. Stockholm: Tekniska Museet, 1979.
- . "The Artisan During America's Wooden Age." In *Technology in America*, ed. Carroll W. Pursell, Jr., pp. 8–17. Washington, D.C.: Voice of America Forum Series, 1979.
- . *David Rittenhouse*. New York: Arno Press, 1980.
- , ed. *The Scientific Writings of David Rittenhouse*. New York: Arno Press, 1980.
- Langley, Harold D., et al. [Five Chapters] In *American Secretaries of the Navy*, 2 vols., ed. Paolo Coletta. Annapolis, Md.: U.S. Naval Institute Press, 1980.
- . "Respect for Civilian Authority: The Tragic Career of Captain Angus." *The American Neptune* 40(1980):23–37.
- . "A Naval Dependent in Washington, 1838–1846." *Records of Columbia Historical Society* 50(1980):105–22.
- Mayr, Otto. "Die Uhr als Symbol für Ordnung, Autorität und Determinismus." In *Die Welt als Uhr: Deutsche Uhren und Automaten 1550–1650*, pp. 1–9. Munich: Bayerisches Nationalmuseum München, 1980.
- . "Die Darstellung von Geschichte im kulturhistorischtechnischen Museum." *Bayerische Blätter für Volkskunde* 7(1980):13–19.
- . "Adam Smith und das Konzept der Regelung." In *Technik-Geschichte*, ed. U. Troitzsch, pp. 241–68. Frankfurt, 1980.
- Mayr, Otto, and Klaus, Maurice, editors. *Die Welt als Uhr: Deutsche Uhren und Automaten 1550–1650*. Munich: Bayerisches Nationalmuseum München, 1980.
- Multhaupt, Robert P. "What the Chemists Found in Pandora's Box: A Brief History of the Chlorinated Hydrocarbons." *Iowa State Journal of Research* 54(1979):175–83.
- . "Copernicus and Bacon as Renovators of Science." In *Studia Copernicana*, pp. 489–499. Warsaw: 1978.

- Lundeberg, Philip K. "The Emergence of Galvanic Sea Mine Warfare: Patterns of Interprofessional Collaboration." *Commission Internationale d'Histoire Militaire Acta*. Bucharest, Romania, 1980.
- Multhaupt, Robert P. "Technology and Society: The Factor of Scale, as Illustrated by the Alkali Industry." In *Symposium No. 1*, pp. 183–91. Stockholm: Tekniska Museet, 1979.
- . "The Science of Matter." In *Science in the Middle Ages*, ed. David C. Lindberg, pp. 369–90. Chicago: University of Chicago Press, 1979.
- Post, Robert C., editor. *Every Four Years: The American Presidency*. Washington, D.C.: Smithsonian Exposition Books, 1980.
- . *Railroad History* 142(Spring 1980).
- Post, Robert; Doster, Alexis, III; and Goodwin, Joe, editors. *The American Land*. Washington, D.C.: Smithsonian Exposition Books, 1979.
- Schlebecker, John T. "Paving the Way to the Future." *Iowa Agriculturist* 81 (Fall 1979):14–15.
- . "The Invention of Agriculture: The American Frontier Compared to the Neolithic Frontier." In *Comparative Frontiers Symposium*. Norman, Okla.: University of Oklahoma, 1980.
- Sharrer, George T. "Oliver Evans and the Beginning of Automated Milling in Maryland and the Upper South." In *Waterwheels and Windmills Symposium*, pp. 11–24. Durham, N.C.: Eno River Association and Friends of West Point Mill, 1979.
- . "Farming in Saratoga County, 1860–1920." *The Grist Mill Saratoga County Historical Society* 14(1980):1–6.
- . "Food Technology in the 20th Century." *National Agricultural Library Today* 5(1-2)(January, June 1980):25–32.
- Vogel, Robert M. "Quadrangular Treasure: The Cartographic Route to Industrial Archeology." *The Journal of the Society for Industrial Archeology* 6(1980):25–54.
- Warner, Deborah Jean. "Astronomers, Artisans and Longitude." In *Transport Technology and Social Change*, pp. 133–40. Stockholm: Tekniska Museet, 1980.
- . "Astronomy in Antebellum America." In *The Sciences in the American Context: New Perspectives*, ed. Nathan Reingold, pp. 55–75. Washington, D.C.: Smithsonian Institution Press, 1980.
- . "Women Inventors at the Centennial." In *Dynamos and Virgins Revisited*, ed. Martha M. Trescott, pp. 102–19. Metuchen, N.J., and London: Scarecrow Press, 1979.
- White, John H., Jr., editor. *Railroad History* 141(Autumn 1979).
- . *A History of the American Locomotive—Its Development: 1830–1880*. 1968. New York: Dover Publications, Inc., 1979.
- . "Holmes Hinkley and the Boston Locomotive Works." *Railroad History* 142(1980):27–52.
- . "The Cover Design Industrial Locomotives: The Forgotten Servant." *Technology and Culture* 21(1980):209–16.

#### *Division of Conservation*

- Odell, Scott, and Goodway, Martha. "Harpsichord Wires of the 17th and 18th Centuries." *American Institute of Conservation of Historic and Artistic Works*, Eighth Annual Meeting, pp. 62–71. [Preprints] Washington, D.C.: American Institute of Conservation, 1980.

#### *Dwight D. Eisenhower Institute for Historical Research*

- Hutchins, James S. "'Dear Hook'; Letters from Bennet Riley, Alphonso Wetmore, and Reuben Holmes, 1822–1833." *The Bulletin of the Missouri Historical Society* 36(July 1980): 203–20.



- . "Western Saddles Before the Cowboy." In *Man Made Mobile: Early Saddles of Western North America*, ed. Richard E. Ahlborn, pp. 39–71. *Smithsonian Studies in History and Technology*, 39. Washington, D.C.: Smithsonian Institution Press, 1980.
- Pogue, Forest C. "George C. Marshall." In *Dictionary of American Biography*, supp. 6, pp. 428–33. New York: Scribners, 1980.

#### *National Numismatics Collections*

- Clain-Stefanelli, Elvira. "Medaillen zum Gedächtnis an den Unabhängigkeitskrieg." In *Friedrich Wilhelm von Steuben. Leben Zeit und Zeitgenossen*, pp. 143–156. Würzburg, 1980.

#### NATIONAL PORTRAIT GALLERY

- Lawson, Michael L. "They Weren't All Lawyers," in *Every Four Years: The American Presidency*. Washington, D.C.: Smithsonian Exposition Books, 1980.
- . [Review] *The Ioway Indians*, by Martha R. Blaine. *Journal of American History* (Fall 1980).
- . [Review] *Tarahumara: Where Night is the Day of the Moon*, by Bernard L. Fontana. *Southwestern Historical Quarterly* (Fall 1980).
- . [Review] *The Reclamation of Disturbed Arid Lands*, ed. Robert A. Wright. *New Mexico Historical Review* (Fall 1980).
- , contributor. *Dictionary of American Biography*. New York: Charles Scribner's Sons, 1980.
- Lawson, Michael L., and Voss, Frederick S. *The Great Crash*. Washington, D.C.: Smithsonian Institution Press, 1979.
- Miller, Lillian B. [Review] *Benjamin West: A Biography*, by Robert C. Alberts, and *John Trumbull: Patriot-Artist of the American Revolution*, by Irma B. Jaffe. *The William and Mary Quarterly* (October 1979).
- . [Review] *New Muses: Art in American Culture, 1865–1920*, by H. Wayne Morgan. *The American Historical Review* (December 1979).
- . [Review] *Eighteenth-Century Prints in Colonial America: To Educate and Decorate*, ed. Joan D. Dolmetsch. *Eighteenth-Century Studies* (Spring 1980).
- . [Review] *Early American Books and Pamphlets in the Field of Art and Architecture*, American Culture Series. *Microform Review* (Spring 1980).
- . [Review] *Mr. Peale's Museum: Charles Willson Peale and the First Popular Museum of Natural Science and Art*, by Charles Coleman Sellers. *Smithsonian* (September 1980).
- Pachter, Marc. "A Banner Year for Biography," *The Washington Post Book World* (December 8, 1979).
- . [Review] *Slave and Citizen: The Life of Frederick Douglass*, by Nathan I. Huggins. *The Washington Post Book World* (March 30, 1980).
- . [Review] *Come to Judgment*, by Alden Whitman. *Washington Journalism Review* (July/August 1980).
- Pfister, Harold Francis, and Sadik, Marvin S. *American Portrait Drawings*. Washington, D.C.: Smithsonian Institution Press, 1980.
- Sadik, Marvin S. "Portraying the Presidents." In *Every Four Years: The American Presidency*. Washington: Smithsonian Exposition Books, 1980.
- . [Foreword] *Robert Edge Pine, A British Portrait Painter in America, 1784–1788*. Washington, D.C.: Smithsonian Institution Press, 1979.
- Sadik, Marvin S., and Pfister, Harold Francis. *American Portrait Drawings*. Washington, D.C.: Smithsonian Institution Press, 1980.
- Stewart, Robert G. *Robert Edge Pine, A British Portrait Painter in America, 1784–1788*. Washington, D.C.: Smithsonian Institution Press, 1979.



- Voss, Frederick S. "Also Rans." In *Every Four Years: The American Presidency*. Washington, D.C.: Smithsonian Exposition Books, 1980.
- Voss, Frederick S., and Lawson, Michael L. *The Great Crash*. Washington, D.C.: Smithsonian Institution Press, 1979.

#### OFFICE OF AMERICAN STUDIES

- Washburn, Wilcomb E. "On the Relationship Between Popular Culture and American Studies." In *Directions and Dimensions in American Culture Studies in the 1980s*, eds. B. Browne and R. H. Wolfe, pp. 31–36. Bowling Green, Ohio: Bowling Green University Popular Press, 1979.
- . "Beyond the Horizons." In *The American Land*, pp. 28–35. Smithsonian Exposition Books. New York: W. W. Norton, 1979.
- . "Symbols and Images." In *Every Four Years*, pp. 172–85. Smithsonian Exposition Books. New York: W. W. Norton, 1980.
- . "Who's the Minority in the District?." [Op-ed article] *The Washington Post* (August 5, 1980).
- . "Of Indians and Anthropologists: A Response to Karl Schlesier." *American Anthropologist* 82(3)(September 1980):558–89.

#### OFFICE OF FOLKLIFE PROGRAMS

- Kalčík, Susan, and Manos, Sue, editors. *A Booklet of Hmong, Khmer, and Lao Cooking*. Washington, D.C.: Smithsonian Institution, 1980.
- Seitel, Peter. *See That We May See*. Bloomington, Ind.: Indiana University Press, 1980.
- Vennum, Thomas, Jr. "A History of Ojibwa Song Form." In *Selected Reports in Ethnomusicology*, vol. 3, no. 2, ed. Charlotte Heth. Los Angeles, Calif.: UCLA Press, 1980.
- . "Frances Densmore." In *Notable American Women: The Modern Period*, ed. Barbara Sickerman et al. Cambridge, Mass.: Belnap Press of Harvard University, 1980.
- Zeitlin, Steven J. "An Alchemy of Mind: The Family Courtship Story." *Western Folklore* 39(1)(January 1980).

### MUSEUM PROGRAMS

#### CONSERVATION ANALYTICAL LABORATORY

- Odell, S., and Goodway, M. "Harpichord Wires of the 17th and 18th Centuries." In *American Institute of Conservation of Historic and Artistic Works*, Eighth Annual Meeting, San Francisco, May 22–25, 1980, pp. 62–71. [Preprints] Washington, D.C.: American Institute of Conservation, 1980.

#### OFFICE OF MUSEUM PROGRAMS

- Hanson, James A. *The Frontier and Buffalo Hunter's Sketch Book*. Chadron, Nebraska: The Fur Press, 1980.
- . "James Bridger, et al., Boat Builders; The Skin Canoes of the Great Plains and Rockies." *Museum of the Fur Trade Quarterly* 16(1)(1980):1–7.
- . "The Reappearing Vanishing American." *Museum News* 59(2)(1980).
- Kingsley, Brandt. *Children in Museums: A Bibliography*. Washington, D.C.: Smithsonian Institution, 1980.
- Wolf, Robert L. "A Naturalistic View of Evaluation." *Museum News* 58(6) (1981).

## SMITHSONIAN INSTITUTION ARCHIVES

- Lytle, Richard H. "Intellectual Access to Archives: I. Provenance and Content Indexing Methods of Subject Retrieval." *The American Archivist* 43(1980): 64-75.
- . "Intellectual Access to Archives: II. Report of an Experiment Comparing Provenance and Content Indexing Methods of Subject Retrieval." *The American Archivist* 43(1980):191-207.
- . "A National Information System for Archives and Manuscript Collections." *The American Archivist* 43(1980):423-26.

## SMITHSONIAN INSTITUTION LIBRARIES

- Goodwin, Jack S. "Current Bibliography in the History of Technology (1978)." *Technology and Culture* 21(1980):281-355.
- Gray, Mary Clare. *Union List of Journal Titles in American Association of Zoological Parks and Aquariums (AAZPA) Libraries*. Wheeling, W.Va.: AAZPA, 1979.
- Pisano, Dominick A. "Forty Years of Jet Aviation: A Selective Bibliography and Research Guide." In *The Jet Age: Forty Years of Jet Aviation*, eds. Walter J. Boyne and Donald S. Lopez, pp. 185-90. Washington, D.C.: National Air and Space Museum, 1979.
- Hyltoft, Johannes. "Thoughts About Book Conservation." *The American Institute for Conservation—Preprints* (October 1979): 50-58.

## SMITHSONIAN INSTITUTION TRAVELING EXHIBITION SERVICE

### EXHIBITION CATALOGUES

- Baer, Winfried. *Berlin Porcelain*. Washington, D.C.: Smithsonian Institution Press, 1980.
- Dockstader, Frederick; Stewart, Tyrone; and Wright, Barton. *The Year of the Hopi*. Washington, D.C.: Smithsonian Institution Traveling Exhibition Service, 1979.
- Hills, Patricia, and Gerdt, Abigail Booth. *The Working American*. Washington, D.C.: Smithsonian Institution Traveling Exhibition Service, 1979.
- Jordan, Wendy Adler. *By the Light of the Quill*. Washington, D.C.: Smithsonian Institution Traveling Exhibition Service, 1979.
- Mazonowicz, Douglas. *On the Rocks: The Story of Prehistoric Art*. Washington, D.C.: Smithsonian Institution Press, 1980.
- Préaud, Tamara. *Sèvres Porcelain*. Washington, D.C.: Smithsonian Institution Press, 1980.
- Pylkkanen, Riitta, and Anna-Lisa Amberg. *Ryijy Rugs from Finland: 200 Years of a Textile Art*. Washington, D.C.: Smithsonian Institution Traveling Exhibition Service, 1979.
- Stevens, Andrea, editor. *Update, 1979-80*. Washington, D.C.: Smithsonian Institution Traveling Exhibition Service, 1979.
- Wortman, Jeffrey. *Jacob Jordaens: A Baroque Master*. Washington, D.C.: Smithsonian Institution Traveling Exhibition Service, 1979.

### BOOKLETS

- Image of the Black in Western Art*. Washington, D.C.: Smithsonian Institution Press, 1980.
- Harris, Elizabeth. *Cut On Wood*. Washington, D.C.: Smithsonian Institution Press, 1979.

#### KITS

- Ehrlich, Hedy. *Butterflies Colorwise*. Washington, D.C.: Smithsonian Institution Traveling Exhibition Service, 1980.
- Robinson, Judith Helm, with Eig, Emily Hotaling. *Carpenter's Lace*. Washington, D.C.: Smithsonian Institution Traveling Exhibition Service, 1980.

#### POSTERS

- Albert Einstein Photographed by Lotte Jacobi.
- And Now A Message—A Century of American Advertising, 1830–1930.
- The Farallon Islands: A Conservation Success Story.
- Impressions/Expressions: Black American Graphics.
- Jupiter and Its Moons.
- Portraits and Dreams: Photographs by Appalachian Children.

### PUBLIC SERVICE

#### DIVISION OF PERFORMING ARTS

- Morris, James R. [Program notes and narrative script] American Musical Theater presentation, *Play a Simple Melody: American Musical Theater—1900–1920*, October 5–7, 1979.
- . "Modern Music: Why Bother?" *Notes on the Arts* (November/December 1979).
- . "Voices Reunited." *Notes on the Arts* (January/February 1980).
- . "Shall We Dance?" *Notes on the Arts* (March/April 1980).
- . "Mystical Moments." *Notes on the Arts* (May/June 1980).
- . "Literacy in the Arts." *Notes on the Arts* (July/August 1980).
- . "A Critical Quandry." *Notes on the Arts* (September/October 1980).
- Reagon, Bernice Johnson. "Rubye Doris Smith Robinson." In *Notable American Women, The Modern Period*, eds. Barbara Sicherman and Carol Hurd Green. Cambridge, Mass.: Belknap Press, 1980.
- . *Voices of the Civil Rights Movement: Black American Freedom Songs, 1960–66*. Washington, D.C.: Smithsonian Institution, 1980.
- . "The Burning Struggle." *New Directions, The Howard University Magazine* (April 1980).
- Williams, Martin. *Griffith: First Artist of the Movies*. England: Oxford University Press, 1980.
- . "Jazz, the Phonograph, and Scholarship." In *The Phonograph and Our Musical Life*, ed. H. Wiley Hitchcock. Institute for Studies in American Music Monographs, 1980.

#### RECORDS

- Duke Ellington: *An Explosion of Genius, 1938–1940*.
- George and Ira Gershwin's *Funny Face*.
- Henry "Red" Allen & Coleman Hawkins, 1933.
- Music of Fats Waller & James P. Johnson.
- The Band Wagon*.
- The Legendary Freddie Keppard, New Orleans Cornet*.
- Voices of the Civil Rights Movement: Black American Freedom Songs, 1960–1966*.

#### OFFICE OF ELEMENTARY AND SECONDARY EDUCATION

- Art to Zoo* [Newsletter]. Published four times during the year.
- Let's Go to the Smithsonian: A Bulletin for Schools*. Published five times during the year.



## OFFICE OF SMITHSONIAN SYMPOSIA AND SEMINARS

- Let's Go to the Smithsonian: Learning Opportunities for Schools, 1980-81.* Washington, D.C.: Smithsonian Institution Press, 1980.  
Dillon, Wilton S. "Margaret Mead and Government." *American Anthropologist* (June 1980).

## OFFICE OF TELECOMMUNICATIONS

### VIDEO TAPE RECORDINGS

- Urban Open Spaces*, 15-minute exhibition tape for the Cooper-Hewitt hearing-impaired training program.

### FILMS

- A Sense of Discovery, The National Collection of Fine Arts, Washington, D.C.*  
*Dragon of the Trees: The Green Iguana.*

### RADIO PRODUCTIONS

- Radio Smithsonian*, 52 half-hour programs.  
*Smithsonian Galaxy*, 104 2½-minute features.

## SMITHSONIAN EXPOSITION BOOKS

- The American Land.* Washington, D.C.: Smithsonian Institution, 1979.  
*Every Four Years: The American Presidency.* Washington, D.C.: Smithsonian Institution, 1980.

## MEMBERSHIP AND DEVELOPMENT

### RESIDENT ASSOCIATE PROGRAM

- The Smithsonian Associate.* Janet W. Solinger, Publisher/Executive Editor, and Helen A. Marvel, Editor.  
Arkin, Diane Lynn. "Leonore Malen's Garden of Light." *Arts* 54(7)(March 1980):170-71.  
Solinger, Janet W. "Building Museum Membership." In *Handbook of Museum Public Relations*. International Council of Museums, 1980.  
———. "Consortia." In *Handbook of Museum Public Relations*. International Council of Museums, 1980.  
———. Introduction *A.R.E.A. in Washington, D.C. Artists Representing Environmental Arts*, Inc. U.S. Office of Personnel Management.

## NATIONAL GALLERY OF ART

- Backlund, Caroline H. [Review] *Edvard Munch. The Man and His Art*, by Ragna Stang. *ARLIS/NA Newsletter* (May 1980).  
———. Index, 1978-1979, to *Smithsonian* 9.  
Bohlin, Diane DeGrazia, editor. *Illustrated Bartsch: Italian Masters of the Sixteenth Century (the Carracci, Passarotti, Procaccini, and Tibaldi)*, 39. New York: Abaris Books, 1980.  
———. [Review] *The Roman Sketchbook of Girolamo da Carpi*, by Norman W. Canedy. *Renaissance Quarterly* 32(3)(Autumn 1979):391-93.  
Bowen, Robert L., Jr. [Review] *The Post-Impressionists*, by Richard Shore. Gannett News Service.  
Brown, David Alan. "Comments." In *Florence and Venice: Comparisons and*

- Relations*, Acts of Two Conferences at Villa I Tatti in 1976–1977, vol. II, Florence, 1980, pp. 359–60.
- . "A Drawing by Zanetti after a Fresco on the Fondaco dei Tedeschi." *Tiziano e Venezia*, Convegno Internazionale di Studi, Venice, 1980, pp. 513–22.
- Clark, H. Nichols B. "Charles Lang Freer: An American Aesthete in the Gilded Era." *The American Art Journal* 11(October 1979):54–68.
- Edelstein, J. M. [Foreword] *Modern Book Collecting*, by Robert A. Wilson. New York: Alfred A. Knopf, 1980.
- . "The Bibliographical Society of America, 1904–1979." *The Papers of the BSA* 73(4)(1979):389–422.
- . [Reviews] *Form and Content* and *Assault on the Book*, by Abe Lerner. *Fine Print* 6(3)(July 1980):98.
- Fletcher, Shelley, and Walsh, Judith. "The Treatment of Three Prints by Whistler on Fine Japanese Tissue." *Journal of the American Institute for Conservation* 19(1979):119–26.
- Hand, John. "The Portrait of Sir Brian Tuke by Hans Holbein the Younger." *Studies in the History of Art, National Gallery of Art* 9(1980):33–49.
- Lewis, Douglas. *The Late Baroque Churches of Venice*. New York and London: Garland Publishing, 1979.
- Newmark, Carolyn Wilson. [Introduction and exhibition checklist] *European Terra Cottas from the Arthur M. Sackler Collections*. Washington, D.C.: National Gallery of Art, 1979.
- Walsh, Judith, and Fletcher, Shelley. "The Treatment of Three Prints by Whistler on Fine Japanese Tissue." *Journal of the American Institute for Conservation* 19(1979):119–26.
- Wheelock, Arthur K., Jr. "De restauratie van 'De Molen,'" *De Kroniek van het Rembrandthuis* 31(1979):9–13.
- . [Review] *All the Paintings of the Rijksmuseum*, by Pieter van Thiel et al. *The Art Bulletin* 62(1980):492–93.
- Williams, William J. *Old Master Paintings from the Collection of Baron Thyssen-Bornemisza*. Hartford, Conn.: United Technologies Corporation, 1979.
- Wilmerding, John. [Introduction] *American Paintings: An Illustrated Catalogue*. Washington, D.C.: National Gallery of Art, 1980.
- . contributor. *American Light: The Luminist Movement, 1850–1875*. Washington, D.C.: National Gallery of Art, and New York: Harper & Row, 1980.
- . "American Light: The Luminist Movement, 1850–1875, an Exhibition at the National Gallery of Art." *The Magazine Antiques* 117(4)(April 1980):847–54.
- . "Winslow Homer's Right and Left." *Studies in the History of Art, National Gallery of Art* 9(1980):59–85.
- . [Reviews] *The Life and Work of Winslow Homer*, by Gordon Hendricks, and *Winslow Homer's Magazine Engravings*, by Philip C. Beam. *Smithsonian* 10(10)(January 1980):126–28.
- . [Review] *Mr. Peale's Museum: Charles Willson Peale and the First Popular Museum of Natural Science and Art*, by Charles Coleman Sellers. *The Magazine Antiques* 118(2)(August 1980):296–98.
- . [Review] *The Thomas Eakins Collection*, by Theodor Siegl. *Pennsylvania Magazine of History and Biography* 104(2)(July 1980):402–3.
- Wilmerding, John, and Corn, Wanda. "The United States." In *Post-Impressionism, Cross-Currents in European and American Painting, 1880–1906*, pp. 219–240. Washington, D.C.: National Gallery of Art, 1980.
- With, Christopher B. "Adolph von Menzel and the German Revolution of 1848." *Zeitschrift fur Kunstgeschichte* 42(2/3)(1979):195–214.

## READING IS FUNDAMENTAL

*RIF Bulletin.* A quarterly publication for volunteers.

*RIF Newsletter.* A quarterly publication, reporting on RIF activities nationwide. The *Newsletter* is distributed to the public as well as to RIF projects. It reaches more than 20,000 readers.

*A Book In Every Hand.* A pamphlet that describes RIF activities around the country.

*Will Your Community's Youngsters Grow Up Reading?* A brochure that explains how to apply to start a RIF project. It is printed in English and Spanish.

*RIF's Painless Guide To Ordering Books and Making Payments.* An instruction manual for project leaders. For projects that have trouble ordering books, RIF also has a problem-solving brochure.

*Resource Manual.* An aid for volunteers organizing their first RIF project.

*Read, Read, Read.* A film on RIF that projects use to involve their communities.

*Profiles.* Descriptions of the nearly 300 publishers and distributors who work with RIF. The profiles list special discounts and services RIF has negotiated for the projects.

*For the Migrant Youngster, Books Are Friends in Strange Places.* A brochure explaining the special help RIF offers projects serving the children of migrant and seasonal farmworkers. It is printed in English and Spanish.

## SMITHSONIAN SCIENCE INFORMATION EXCHANGE, INC.

Hersey, David F. [Introduction] "Research in Progress Information Systems. In *Proceedings of International Symposium on Animal Health and Disease Data Banks*, December 4-6, 1978, Washington, D.C.; Section 4, pp. 169-73. Miscellaneous Publication No. 1381. Washington, D.C.: U.S. Government Printing Office, 1979.

———. "R&D Information: Implications for the Growth of Science and Technology in the United States." *UNESCO Journal of Information Science, Librarianship & Archives Administration* 2(2)(1980):89-96.



## APPENDIX 6. *Academic and Research Training Appointments in Fiscal Year 1980*

The Smithsonian offers, through the Office of Fellowships and Grants, research and study appointments to visiting scientists, scholars, and students. These appointees are provided access to the Institution's facilities, staff specialties, and reference resources. The persons listed in this appendix began their residencies between May 1, 1979, and September 30, 1980. Predoctoral Fellows are designated as Ph.D. candidates, and those names marked with an asterisk indicate Visiting Research students. Postdoctoral Fellows, senior scholars, and visiting scientists and interns are listed as such.

### PROGRAM IN AMERICAN AND CULTURAL HISTORY

**William F. Brooks**, Ph.D., University of Illinois. *Instrumental practice in mid-19th century American shows*, with Mrs. Cynthia A. Hoover, Department of Cultural History, National Museum of History and Technology, from November 15, 1979, through January 15, 1981.

**William B. Burr**, Ph.D. candidate, Northern Illinois University. *Building strength at the center; the political economy of the Marshall Plan, 1947–1950*, with Dr. Forrest C. Pogue, Eisenhower Institute for Historical Research, National Museum of History and Technology, from September 1, 1980, through August 31, 1981.

**Reginald D. Butler**, Ph.D. candidate, Johns Hopkins University. National Museum of History and Technology Fellowship. *The Negro baseball leagues, 1865–1947; the significance of sport in Afro-American culture and A study of Landon Carter and the plantation world of 18th century Virginia*, with Mr. Gary Kulik, Department of History of Technology, and Mr. Carl H. Scheele, Department of Cultural History, National Museum of History and Technology, from May 1, 1980, through April 30, 1981.

**Douglas Daniels**, Ph.D., University of California, Berkeley. *Black secular music and American popular culture in the 20th century*, with Dr. Roger G. Kennedy, Director, National Museum of History and Technology, from September 1, 1980, through August 31, 1981.

**David H. Glassberg**, Ph.D., Johns Hopkins University. *American civic pagentry and the image of the community, 1900–1930*, with Mr. Carl Scheele, Department of Cultural History, National Museum of History and Technology, from August 1, 1979, through July 31, 1980.

**Susan Hanson**, Ph.D., University of Maryland. *Home Sweet Home; domestic views of rural America, 1865–1920*, with Mrs. Anne C. Golovin, Department of Cultural History, National Museum of History and Technology, from September 1, 1980, through August 31, 1981.

**Ann L. Henderson**, Ph.D. candidate, George Washington University. *Adelaide Johnson, American sculptress*, with Ms. Edith P. Mayo, Department of National History, and Dr. Ellen G. Miles, National Portrait Gallery, from June 1, 1979, through August 31, 1980.

**Brian J. Horrigan**, Ph.D. candidate, University of California, Berkeley. *The Better Homes movement of the 1920s; the single family home and American*

society, with Mr. Marc Pachter, National Portrait Gallery, and Dr. Terry Sharrer, Department of History of Technology, National Museum of History and Technology, from September 1, 1980, through June 30, 1981.

**Deborah G. Jenkins,\*** M.A. candidate, Georgia Southern College. *Study of the political and social effects of the Smithsonian African Expedition led by Col. Theodore Roosevelt*, with Mr. William Deiss, Smithsonian Archives, from June 9, 1980, through August 15, 1980.

**Elise K. Kirk,** Ph.D., Catholic University of America. *A history of music in the White House, 1800 to the present*, with Mrs. Margaret B. Klapthor, Department of National History, and Mrs. Cynthia A. Hoover, Department of Cultural History, from June 1, 1979, through August 31, 1979, and June 16, 1980, through July 31, 1980.

**Constance Myers,** Ph.D., University of South Carolina. *Lobby for equality; Anita Pollitzer and the National Woman's Party, 1920 to 1960*, with Ms. Edith Mayo, Department of National History, National Museum of History and Technology, from August 1, 1980, through January 31, 1981.

**Barry O'Connell,** Ph.D., Harvard University. *Coal miners in the life of the nation, 1930-1950*, with Mr. Ralph Rinzler, Folklife Program, Office of American Studies, from August 1, 1979, through July 31, 1980.

**Beverly Orlove,** Ph.D. candidate, University of Michigan. *Civic celebration in America, the early Republic*, with Dr. Lillian Miller, Charles Willson Peale Papers, National Portrait Gallery, from September 15, 1980, through March 14, 1981.

**Katherine Preston,\*** M. Music candidate, University of Maryland. *John Prosperi, Washington musician, 1877-1900*, with Mrs. Cynthia Hoover, Department of Cultural History, National Museum of History and Technology, from September 15, 1980, through November 21, 1980.

**Robert Winans,** Ph.D., New York University. *A demographic study of the historical and geographical distribution of banjo playing and banjo-playing styles*, with Mr. Ralph Rinzler, Folklife Program, Office of American Studies, from September 1, 1980, through August 31, 1981.

## PROGRAM IN ANTHROPOLOGY

**Kathleen Bragdon,\*** Ph.D. candidate, Brown University. *The later history of the native peoples of southern New England, 1675-1869*, with Dr. R. H. Ives Goddard, Department of Anthropology, National Museum of Natural History, from May 19, 1980, through July 25, 1980.

**Andrew Fuchs,** Ph.D., University of Pennsylvania. *Strontium/calcium ratios in paleodietary research*, with Dr. Donald J. Ortner and Dr. D. W. Von Endt, Department of Anthropology, National Museum of Natural History, from September 1, 1980, through August 31, 1981.

**R. Christopher Goodwin,** Ph.D., Arizona State University. *Cultural ecology and ceramic attributes; an analysis of archeological remains from the Caribbean area*, with Dr. Clifford Evans, Jr., Department of Anthropology, National Museum of Natural History, from December 1, 1979, through November 30, 1980.

**Sonia E. Guillen,\*** Ph.D. candidate, University of Michigan. *Biological relationship and adaptation in pre-Hispanic coastal Peru; a study based on Hrdlicka's osteological collection at the Smithsonian*, with Dr. Douglas Ubelaker, Department of Anthropology, National Museum of Natural History, from September 1, 1980, through November 7, 1980.

**Gary A. Haynes,** Ph.D. candidate, Catholic University of America. *Experimental and empirical studies of bone modification*, with Dr. Dennis J. Stanford, Department of Anthropology, National Museum of Natural History, from October 1, 1979, through December 15, 1980.



**John A. Hotopp**, Ph.D., University of Iowa. *Archeology of lower Cheyenne River sites (39ST1)*, with Dr. Waldo Wedel, Department of Anthropology, National Museum of Natural History, from September 1, 1980, through August 31, 1981.

**Lilia M. Cheuiche Machado**, Ph.D. candidate, University of São Paulo, Brazil. *Interpretation of physical anthropological remains and use of quantitative method of ceramic analysis*, with Dr. Clifford Evans, Jr., Dr. Betty J. Meggers, and Dr. Douglas H. Ubelaker, Department of Anthropology, National Museum of Natural History, from September 1, 1978, through August 31, 1980.

**Sally McLendon**, Ph.D., University of California, Berkeley. *A contextualized study of Pomoan baskets in Smithsonian collections*, with Dr. William C. Sturtevant, Department of Anthropology, National Museum of Natural History, from September 1, 1980, through February 28, 1981.

**Robert H. Sayers**, Ph.D., University of Arizona. *An analysis of Pueblo Indian textiles in the Smithsonian*, with Dr. William C. Sturtevant, Department of Anthropology, National Museum of Natural History, from October 1, 1979, through September 30, 1980.

**Douglas G. Sutton**, Ph.D., University of Otago, New Zealand. *Cultural adaptation in the subsistence economics of pre- and prohistoric coastal hunters in Labrador*, with Dr. William W. Fitzhugh, Department of Anthropology, National Museum of Natural History, from February 1, 1980, through April 30, 1981.

**Charles J. Utermohle**, Ph.D. candidate, Arizona State University. *Cranial variation and phenetic distances; an appraisal from Birnirk and Thule period Eskimo crania*, with Dr. Donald J. Ortner, Department of Anthropology, National Museum of Natural History, from December 1, 1979, through December 31, 1980.

**Kenneth Whistler**, Ph.D., University of California, Berkeley. *Complication of a dictionary of Alsea, an extinct Native American language of the Oregon coast*, with Dr. R. H. Ives Goddard, Department of Anthropology, National Museum of Natural History, from September 1, 1980, through August 31, 1981.

## PROGRAM IN ASTROPHYSICS

**Mitchell A. Berger**, Ph.D. candidate, Harvard University. *Studies in astrophysics*, with Dr. George B. Field, Smithsonian Astrophysical Observatory, from September 1, 1980, through May 31, 1981.

**Ann M. Boesgaard**, Ph.D., University of California, Berkeley. Visiting Research Scientist. *Stellar spectroscopy with interests in mass loss, light abundance, and chromospheres and coronae*, with Dr. George B. Field, Smithsonian Astrophysical Observatory, from August 15, 1980, through February 15, 1981.

**Jay A. Bookbinder**, Ph.D. candidate, Harvard University. *Problems in extragalactic astronomy*, with Dr. A. G. W. Cameron, Smithsonian Astrophysical Observatory, from September 1, 1980, through May 31, 1981.

**Haldan N. Cohn**, Ph.D., Princeton University. *Astrophysical research primarily centered on stellar systems*, with Dr. Alexander Dalgarno, Smithsonian Astrophysical Observatory, from January 1, 1980, through December 31, 1980.

**Brian J. Connor**, Ph.D. candidate, Harvard University. *Extensive work in astronomy, physics, and applied mathematics*, with Dr. David Latham, Smithsonian Astrophysical Observatory, from September 1, 1979, through May 31, 1981.

**Mark S. Giampapa**, Ph.D., University of Arizona. *Investigation of the origin, structure, and evolution of stellar chromospheres*, with Dr. Robert Noyes, Smithsonian Astrophysical Observatory, from September 15, 1980, through September 14, 1981.



**Stephen M. Kahn**, Ph.D., University of California, Berkeley. *Further study of erratic variability in black hole candidate X-ray sources, Cygnus X-1, Circinus X-1, and GX339-4*, with Dr. Riccardo Giacconi, Smithsonian Astrophysical Observatory, from September 1, 1980, through August 31, 1981.

**Stephen M. Kent**, Ph.D., California Institute of Technology. *Studies in optical and infrared astronomy*, with Dr. Herb Gursky, Smithsonian Astrophysical Observatory, from December 1, 1979, through August 31, 1981.

**Randall Knight**, Ph.D., University of California, Berkeley. *The physics and chemistry of interstellar molecules*, with Dr. William H. Parkinson, Smithsonian Astrophysical Observatory, from September 1, 1980, through August 31, 1981.

**Richard London**, Ph.D., University of Colorado. *Studies in theoretical and high energy physics*, with Dr. Alexander Dalgarno, Smithsonian Astrophysical Observatory, from October 1, 1979, through September 30, 1981.

**Phyllis M. Lugg**, Ph.D. candidate, Harvard University. *Dependence of the properties of bright cluster galaxies on cluster type*, with Dr. William Liller, Smithsonian Astrophysical Observatory, from September 1, 1979, through May 31, 1981.

**Herman Marshall**, Ph.D. candidate, Harvard University. *Research in X-ray astronomy*, with Dr. Jonathan Grindlay, Smithsonian Astrophysical Observatory from September 1, 1979, through August 31, 1980.

**Stephen McMillan**, Ph.D. candidate, Harvard University. *Research in astrophysics*, with Dr. Alan Lightman, Smithsonian Astrophysical Observatory, from June 1, 1980, through August 31, 1980.

**Takashi Sakurai**, Ph.D., University of Tokyo, Japan. Langley-Abbott Fellow. *Research on problems related to magnetic fields in the solar corona*, with Dr. Robert Noyes, Smithsonian Astrophysical Observatory, from September 1, 1980, through August 31, 1981.

## PROGRAM IN CONSERVATION

**Ira Block**, Ph.D., University of Maryland. *Effect of an alkaline rinse on the aging of cellulosic textile materials*, with Mr. Robert Organ, Conservation Analytical Laboratory, from August 15, 1980, through August 14, 1981.

## PROGRAM IN EARTH SCIENCES

**Leo Barnard**,\* Ph.D. candidate, Texas A and M University. *Accumulation of manganese micromnodules and associated trace minerals*, with Dr. Jack W. Pierce, Department of Paleobiology, National Museum of Natural History, from May 12, 1980, through July 18, 1980.

**Christian Blanpied**, University of Paris. *Western Mediterranean sedimentation on slopes and transport of fine-grained sediments by mass gravity versus current transport mechanisms*, with Dr. Daniel Stanley, Department of Mineral Sciences, National Museum of Natural History, from September 1, 1979, through August 31, 1980.

**Amina H. M. Hamdan**, Ph.D. candidate, Ain-Shams University, Egypt. *A study of the geology and geomorphology of selected features on some of the terrestrial planets and their moons*, with Dr. Farouk El-Baz, Department of Science and Technology, National Air and Space Museum, from December 1, 1979, through November 30, 1980.

**Janet Ann Zilczer**, Ph.D. candidate, George Washington University. *Domain structures in partially ordered natural potassium feldspars*, with Dr. Daniel Appleman, Department of Mineral Sciences, National Museum of Natural History, from September 1, 1979, through February 28, 1981.

## PROGRAM IN ENVIRONMENTAL SCIENCES

**Yosef Ben-Tal**, Ph.D., Michigan State University. *Involvement of plant hormones in flower differentiation*, with Dr. Charles F. Cleland, Radiation Biology Laboratory, from August 20, 1980, through August 19, 1981.

**Claire Buchanan**, Ph.D., University of New Hampshire. *Action spectra of the phototactic and photokinetic responses of Daphnia*, with Dr. Bernard Goldberg and Dr. William Klein, Radiation Biology Laboratory, from November 1, 1978, through October 31, 1980.

**Robert D. Burke**, Ph.D., University of Alberta. *Echinoid metamorphosis; resorption and transformation of larval structures*, with Dr. Mary Rice, Fort Pierce Bureau, from September 1, 1979, through August 31, 1980.

**Susan W. Cowper**, Ph.D. candidate, University of Maryland. *Succession in reef lagoons, hypothesis testing in the Smithsonian microcosm*, with Dr. Walter H. Adey, Department of Paleobiology, National Museum of Natural History, from May 15, 1980, through April 14, 1981.

**Carolyn M. Crockett**, Ph.D., University of Washington. International Environmental Sciences Program—IESP Venezuelan Project. *Socio-ecology of Venezuelan red howler monkeys*, with Dr. John F. Eisenberg, National Zoological Park, from February 1, 1980, through January 1, 1981.

**Susan M. Daniels**, Ph.D. candidate, University of Maryland. *The application of Cibacron blue F3GA in the purification of phytochrome from dark-grown and green plants*, with Dr. William O. Smith, Radiation Biology Laboratory, from July 15, 1980, through June 4, 1981.

**Malcolm Erskian**, Ph.D., University of California, Davis. *Foraminiferan spatial patterns in shallow water and abyssal environments*, with Dr. Martin A. Buzas, Department of Paleobiology, National Museum of Natural History, from June 1, 1980, through November 30, 1980.

**Jan R. Factor**, Ph.D., Cornell University. *Studies on the larval development, histology, and ultrastructure of the lobster, Nephropsis aculeata*, with Dr. Robert H. Gore and Dr. Mary E. Rice, Smithsonian Fort Pierce Bureau, from October 1, 1979, through September 30, 1980.

**John Robert Giurgevich**, Ph.D., University of Georgia. *Dynamics of selected components of the below-ground biomass of a tidal marsh on the Rhode River*, with Dr. Bert Drake, Radiation Biology Laboratory and Chesapeake Bay Center for Environmental Studies, from October 1, 1979, through September 30, 1980.

**Judith L. Hand**, Ph.D., University of California, Los Angeles. *The vocal repertoire of Larus novahollandiae*, with Dr. Eugene Morton, National Zoological Park, from September 1, 1979, through August 31, 1980.

**Rita Khanna**, Ph.D., University of Illinois. *Mechanism of excitation energy migration in phycobilisomes*, with Dr. Elisabeth Gantt, Radiation Biology Laboratory, from January 1, 1980, through June 30, 1981.

**Roland J. Limpert**, Ph.D., Johns Hopkins University. Chesapeake Bay Center for Environmental Studies Visiting Scientist. *Analyzing data representing history of the use of a wintering area, Rhode River, by waterfowl*, with Dr. James Lynch, Chesapeake Bay Center for Environmental Studies, from May 1, 1980, through October 31, 1980.

**Hemanta Mishra**, Ph.D. candidate, University of Edinburgh, Scotland. International Environmental Sciences Program—IESP Tiger Project. *Population distribution and behavior of chital in the Royal Chitwan National Park with reference to tiger population and distribution*, with Dr. Theodore Reed and Dr. Christen Wemmer, National Zoological Park, from February 1, 1979, through August 31, 1981.

**Marjorie Mooney**,\* M.S. candidate, University of Maryland. *Effect of light intensity on the light harvesting pigments of a blue-green alga*, with Dr. Elisabeth Gantt, Radiation Biology Laboratory, from June 2, 1980, through August 8, 1980.



**Frank Oldfield**, Ph.D., University of Leicester, England. Chesapeake Bay Center for Environmental Studies Visiting Scientist. *Research on Rhode River and Chesapeake Bay sediments*, with Dr. David Correll, Chesapeake Bay Center for Environmental Studies, and Dr. Jack Pierce, Department of Paleobiology, National Museum of Natural History, from June 25, 1980, through July 21, 1980.

**Thane K. Pratt**, Ph.D. candidate, Rutgers University. International Environmental Sciences Program. *Seed dispersal systems in New Guinea rainforests*, with Dr. Michael Robinson, Smithsonian Tropical Research Institute, from August 1, 1979, through July 31, 1980.

**Thomas Redlinger**, Ph.D., University of Arizona. *An investigation into the molecular mechanism governing phycobilisome attachment to photosynthetic membranes in red alga*, with Dr. Elisabeth Gantt, Radiation Biology Laboratory, from November 1, 1979, through October 31, 1981.

**James K. Russell**, Ph.D., University of North Carolina. *Scent mark communication in golden lion tamarins*, with Dr. Devra Kleiman, National Zoological Park, from September 1, 1980, through August 31, 1981.

**Ranka Sekulic**, Ph.D. candidate, University of Maryland. International Environmental Sciences Program—IESP Venezuelan Project. *Long-distance communication of howler monkeys*, with Dr. John F. Eisenberg, National Zoological Park, from October 1, 1979, through September 30, 1980.

**J. L. David Smith**, Ph.D. candidate, University of Minnesota. International Environmental Sciences Program—IESP Tiger Project. *Tiger dispersal in Chitwan National Park, Nepal, in relation to other aspects of social organization*, with Dr. Christen Wemmer, National Zoological Park, from February 1, 1979, through September 30, 1980.

**Bruce Whitaker**, Ph.D., Michigan State University. *Riboflavin analog incorporation into the photoreceptor of flavin auxotrophs of *Phycomyces**, with Dr. Walter Shropshire, Radiation Biology Laboratory, from October 1, 1979, through December 31, 1980.

**W. Christopher Wozencraft**,\* Ph.D. candidate, University of Kansas. *The distinctions between the mongooses (*Herpestidae*) and the civets (*Viverridae*) and their relationships to other carnivoran families*, with Dr. Christen Wemmer, National Zoological Park, from June 2, 1980, through August 8, 1980.

## PROGRAM IN EVOLUTIONARY AND SYSTEMATIC BIOLOGY

**Raymond T. Bauer**, Ph.D., Scripps Institution of Oceanography. *A systematic study of the North Pacific shrimp fauna based on the Albatross collections*, with Dr. Raymond B. Manning, Department of Invertebrate Zoology, National Museum of Natural History, from August 1, 1980, through July 31, 1981.

**Hilconida Calumpang**, M.S. candidate, Silliman University, Philippines. Educational Outreach Program. *Training in algae systematics and marine invertebrate systematics from Central Visayas*, with Dr. Ernani G. Menez, Smithsonian Oceanographic Sorting Center, National Museum of Natural History, from May 15, 1980, through May 14, 1981.

**Stephen Gardiner**, Ph.D., University of North Carolina. *Fine structural study of the new vestimentiferan from the geothermal vents of the Galapagos Rift region*, with Dr. Meredith Jones, Department of Invertebrate Zoology, National Museum of Natural History, from August 1, 1980, through July 31, 1981.

**Patricia Hadley**,\* M.S. candidate, University of Maryland. *A revisionary study of the triple-fin blenny genus, *Helcogramma**, with Dr. Victor Springer, Department of Vertebrate Zoology, National Museum of Natural History, from June 2, 1980, through August 8, 1980.

**Edward J. Marintsch**, Ph.D. candidate, State University of New York at Stony Brook. *Biostratigraphy and systematic paleontology of Middle Ordovician bryozoa from the southern Appalachian Basin*, with Dr. Richard S. Boardman,



Department of Paleobiology, National Museum of Natural History, from March 1, 1980, through August 31, 1980.

**Lynne Parenti**, Ph.D., City University of New York. *A taxonomic revision and biogeographic analysis of fishes of the genus Orestias (Cyprinodontidae)*, with Dr. Stanley Weitzman and Dr. Richard Vari, Department of Vertebrate Zoology, National Museum of Natural History, from August 11, 1980, through August 10, 1981.

**Gregory Pregill**, Ph.D., University of Kansas. *A study of the paleo-herpetofauna of the West Indies*, with Dr. Storrs L. Olson, Department of Vertebrate Zoology, National Museum of Natural History, from July 1, 1979, through June 30, 1980.

**Ivica Radovic**, Ph.D. candidate, University of Belgrade. *Comparative morphological, taxonomic, and ecological study of Sphecoidea (Hymenoptera, Insecta)*, with Dr. Karl V. Krombein and Dr. Arnold S. Menke, Department of Entomology, National Museum of Natural History, from October 1, 1979, through July 31, 1980.

**Kenneth D. Rose**, Ph.D., University of Michigan. *Evolution of Early Tertiary mammal assemblages in Wyoming*, with Dr. Robert J. Emry, Department of Paleobiology, National Museum of Natural History, from September 1, 1979, through August 31, 1980.

**Mayandy Sivadasan**, Ph.D. candidate, University of Calicut. *Taxonomic study of Araceae of southwestern India*, with Dr. Dan H. Nicolson, Department of Botany, National Museum of Natural History, from August 1, 1979, through July 31, 1980.

**Ronald Toll**,\* Ph.D. candidate, University of Maryland. *The morphology of the gladius in the order Teuthoidea (Mollusca, Cephalopoda) in relation to systematics and phylogeny*, with Dr. Clyde Roper, Department of Invertebrate Zoology, National Museum of Natural History, from September 8, 1980, through October 10, 1980.

**Roberta A. Townsend**, Ph.D. candidate, University of Melbourne. *The crustose coralline algae of southern Australia*, with Dr. Walter H. Adey, Department of Paleobiology, National Museum of Natural History, from February 1, 1980, through January 1, 1981.

**Scott L. Wing**, Ph.D. candidate, Yale University. *Paleoclimate and paleoecology of the Early Eocene Willwood formation in the Bighorn Basin in Wyoming*, with Dr. Leo J. Hickey, Department of Paleobiology, National Museum of Natural History, from January 1, 1980, through July 31, 1980.

**George William Wolfe**, Ph.D. University of Tennessee. *The Dytiscidae and Noteridae of Sri Lanka*, with Dr. Paul J. Spangler, Department of Entomology, National Museum of Natural History, from September 1, 1979, through August 31, 1980.

## PROGRAM IN THE HISTORY OF ART

**Ann Uhry Abrams**, Ph.D., Emory University. *Late 18th-century American history painting*, with Dr. Lillian Miller, Charles Willson Peale Papers, National Portrait Gallery, from August 1, 1980, through July 31, 1981.

**Henry Adams**, Ph.D. candidate, Yale University. *The opalescent mind of John La Farge*, with Dr. Joshua C. Taylor, National Collection of Fine Arts, from September 1, 1979, through August 31, 1980.

**Jeremy Adamson**, Ph.D. candidate, The University of Michigan. *American paintings of Niagara Falls, 1800–1880*, National Collection of Fine Arts, from January 1, 1979, through January 1980 (extended to December 27, 1980).

**Suzanne E. Cahill**,\* Ph.D. candidate, University of California, Berkeley. *Images of the goddess Hsi Wang Mu in medieval Chinese art; a study in iconography*, with Dr. Thomas Lawton and Dr. Yoshiaki Shimizu, Freer Gallery of Art, from June 23, 1980, through August 29, 1980.

**Andrew Cosentino**, Ph.D., University of Delaware. National Collection of Fine Arts and Scholarly Studies Program. *American art and the rural ideal*, with Dr. Joshua C. Taylor, National Collection of Fine Arts, from September 1, 1980, through February 28, 1981.

**Jennifer A. Gibson**, Ph.D. candidate, University of Virginia. *The 1940's in New York; radical politics and avant-garde art*, with Mr. Garnett McCoy, Archives of American Art, from June 1, 1979, through May 31, 1980.

**Piri Halasz**, Ph.D. candidate, Columbia University. *Abraham Rattner, his art and its context in the 1940's*, with Dr. Joshua C. Taylor and Dr. Harry Z. Rand, National Collection of Fine Arts, from July 1, 1980, through June 30, 1981.

**Jeffrey Hayes**, Ph.D. candidate, University of Maryland. *Color-idea; the sources and development of Oscar Bluemner's principles of painting, 1907 to 1929*, with Dr. Joshua C. Taylor, National Collection of Fine Arts, from June 1, 1980, through May 31, 1981.

**Nancy Heller**, Ph.D. candidate, Rutgers University. *The sculpture of Ibram Lassaw*, with Mrs. Cynthia Jaffee McCabe and Dr. Judith K. Zilczer, Hirshhorn Museum and Sculpture Garden, from August 1, 1979, through January 31, 1981.

**Hongnam Kim**, Ph.D. candidate, Yale University. *Chou Liang-kung (1612-1672) and his painter friends; mid-17th-century Chinese painting*, with Dr. Shen C. Y. Fu, Freer Gallery of Art, from September 1, 1980, through February 28, 1981.

**Ellen Landau**, Ph.D. candidate, The University of Delaware. *Lee Krasner and the development of abstract expressionism*, National Collection of Fine Arts, from July 31, 1979, through August 1, 1980.

**Anne Palumbo**, Ph.D. candidate, University of Maryland. *Joseph Pennell and the landscape of change*, with Dr. Lillian Miller, Charles Willson Peale Papers, National Portrait Gallery, from September 1, 1980, through August 31, 1981.

**Arthur Pontynen**, Ph.D. candidate, University of Iowa. *Early development of Taoist art*, with Dr. Thomas Lawton, Freer Gallery of Art, from September 1, 1979, through May 31, 1980.

**Lars Saari**,\* Licentiate, Abo Akademi, Finland. *Studies in American pop art and related trends and their influence in Europe and Finland*, with Dr. Harry Z. Rand, National Collection of Fine Arts, from June 2, 1980, through August 8, 1980.

**Julie Ann Schimmel**, Ph.D. candidate, New York University. *Westward the course of empire; the rise and progress of John Mix Stanley*, with Mr. William Truettner, National Collection of Fine Arts, from January 1, 1979, through December 31, 1980.

**Merrill Schleier**, Ph.D. candidate, University of California, Berkeley. *The image of the skyscraper in American art, 1900-1930*, with Dr. Joshua C. Taylor, National Collection of Fine Arts, and Dr. Judith K. Zilczer, Hirshhorn Museum and Sculpture Garden, from September 1, 1979, through August 31, 1980.

**Wilford W. Scott**, Ph.D. candidate, University of Delaware. *Philadelphia modernism, 1905 to 1920*, with Mrs. Adelyn D. Breeskin and Dr. Joshua C. Taylor, National Collection of Fine Arts, and Dr. Judith K. Zilczer, Hirshhorn Museum and Sculpture Garden, from June 1, 1979, through May 31, 1981.

**Marc Simpson**, Ph.D. candidate, Yale University. *Anglo-American artists and writers in Worcestershire, 1885-1892; Frank Millet, Edwin Austin Abbey, John S. Sargent, Henry James and others*, with Dr. Joshua C. Taylor and Dr. Lois M. Fink, National Collection of Fine Arts, from September 1, 1980, through August 31, 1981.

**Eiichi Taguchi**, Ph.D., Tokyo University of Fine Arts. Harold P. Stern Memorial Fund Fellowship. *Study of the Japanese painting collection*, with Dr. Thomas Lawton, Freer Gallery of Art, from June 9, 1980, through August 15, 1980.

**James Yarnall**, Ph.D. candidate, The University of Chicago. *John La Farge's theory and practice of landscape painting*, National Collection of Fine Arts, October 14, 1979 through September 30, 1980.



## PROGRAM IN THE HISTORY OF SCIENCE AND TECHNOLOGY

**Joseph J. Corn III**, Ph.D., University of California, Berkeley. Guggenheim Fellow. *The gospel of aviation*, with Paul A. Hanle, Space Science and Exploration Department, National Air and Space Museum, from August 1, 1979, through September 30, 1980.

**Elizabeth Keeney**, Ph.D. candidate, University of Wisconsin. *Botany in 19th-century American culture*, with Dr. Nathan Reingold, Joseph Henry Papers, from September 1, 1980, through May 31, 1981.

**Benjamin S. Kelsey**, M.S., Massachusetts Institute of Technology. The Charles A. Lindbergh Chair of Aerospace History. *Development of military aircraft, 1927–1940*, with Mr. Donald S. Lopez, Department of Aeronautics, National Air and Space Museum, from February 1, 1979, through January 31, 1981.

**Nancy Knight**, Ph.D. candidate, Duke University. *The irregular practitioner and his instruments in the progressive era; a focus on Smithsonian collections*, with Dr. Audrey B. Davis, Department of History of Science, National Museum of History and Technology, from September 1, 1979, through May 31, 1980.

**Larry Lankton**, Ph.D., University of Pennsylvania. *Technological change within a mining community, the Quincy copper mine, 1846 to 1931*, with Dr. Brooke Hindle, Historian, and Dr. John Hoffman, and Mr. Robert Vogel, Department of History of Technology, National Museum of History and Technology, from May 15, 1980, through May 14, 1981.

**Richard M. Levy**, Ph.D., University of California, Berkeley. *The growth and development of the construction industry in Washington 1865–1917*, with Mr. Robert M. Vogel, Department of History of Technology, National Museum of History and Technology, from February 15, 1980, through August 31, 1980.

**Jonathan M. Liebenau**, Ph.D. candidate, University of Pennsylvania. *Medicine and the medical industry, Philadelphia 1890–1930*, with Dr. Audrey B. Davis and Dr. Ramunas Kondratas, Department of History of Science, National Museum of History and Technology, from September 1, 1979, through August 31, 1980.

**Barbara Melosh**, Ph.D., Brown University. *Technological innovation and the hospital as workplace, 1945 to the present*, with Dr. Audrey Davis and Dr. Ramunas Kondratas, Department of History of Science, National Museum of History and Technology, from September 1, 1980, through August 31, 1981.

**Paul Shaw**,\* Ph.D. candidate, Columbia University. *History of American type founders including their type designs*, with Dr. Elizabeth Harris, Department of Cultural History, National Museum of History and Technology, from July 7, 1980, through September 12, 1980.

**Philip Shoemaker**,\* Ph.D. candidate, University of Wisconsin. *Ormsby McKnight Mitchel and astronomy in America*, with Dr. Marc Rothenberg, Joseph Henry Papers, from July 21, 1980, through September 26, 1980.

**Junius Brutus Stroud III**, Ph.D., University of Virginia. *The use of mathematical models in the teaching of mathematics and the history of mathematics in America*, with Dr. Uta C. Merzbach, Department of History of Science, National Museum of History and Technology, from July 15, 1979, through July 14, 1980.

**Jeffrey Sturchio**, Ph.D., University of Pennsylvania. *Chemists and the chemical industry in America, 1860 to 1940*, with Dr. Jon Eklund, Department of History of Science, National Museum of History and Technology, from September 1, 1980, through August 31, 1981.

**William L. Withuhn**, Ph.D. candidate, Cornell University. *American steam locomotives; an engineering history, 1900 to 1953*, with Mr. John H. White, Jr., Department of History of Technology, National Museum of History and Technology, from March 1, 1980, through February 28, 1981.



## PROGRAM IN TROPICAL BIOLOGY

**Diane DeSteven**, Ph.D., University of Michigan. *Patterns of predispersal seed predation in tropical shrubs*, with Dr. Egbert G. Leigh, Smithsonian Tropical Research Institute, from September 1, 1980, through August 31, 1981.

**Susan A. Foster**, Ph.D. candidate, University of Washington. Walter Rathbone Bacon Scholarship. *Influence of habitat structure on the size and composition of schools of Caribbean acanthurids*, with Dr. D. Ross Robertson, Smithsonian Tropical Research Institute, from September 15, 1980, through September 14, 1981.

**Raymond Highsmith**, Ph.D., University of Wisconsin. *Bioerosion of coral skeletons and mollusc shells*, with Dr. Peter Glynn and Dr. Harilaos Lessios, Smithsonian Tropical Research Institute, from September 1, 1980, through May 31, 1981.

**Steven G. Hoffman**, Ph.D., University of California, Santa Barbara. *Time and energy budget responses to food addition in an herbivorous parrotfish*, with Dr. D. Ross Robertson and Dr. Ira Rubinoff, Smithsonian Tropical Research Institute, from January 1, 1980, through December 31, 1980.

**Lucinda McDade**, Ph.D., Duke University. *The effect of plant density, as influenced by human alteration of habitat, on reproductive biology of hermit hummingbird pollinated plant species*, with Dr. Robert Dressler, Smithsonian Tropical Research Institute, from September 1, 1980, through August 31, 1981.

**Francis E. Putz**, Ph.D. candidate, Cornell University. *How lianas influence forest dynamics and how forest dynamics influence the distribution and abundance of lianas*, with Dr. Egbert Leigh, Smithsonian Tropical Research Institute, from July 1, 1979, through December 31, 1980.

**Michael J. Ryan**, Ph.D. candidate, Cornell University. *Factors influencing differential reproductive strategies in the neotropical frog, *Physalaemus pustulosus**, with Dr. A. Stanley Rand, Smithsonian Tropical Research Institute, from July 1, 1979, through June 30, 1981.

**Barbara L. Thorne**, Ph.D. candidate, Harvard University. *A study of aspects of the ecology of arboreal *Nasutitermes* in a New World tropical forest*, with Dr. Egbert G. Leigh and Dr. Robert E. Silberglied, Smithsonian Tropical Research Institute, from May 1, 1979, through April 30, 1980.

**S. Joseph Wright**, Ph.D., University of California, Los Angeles. *Experimental study of interspecific competition and migrant ecology*, with Dr. A. Stanley Rand, Smithsonian Tropical Research Institute, from August 1, 1980, through July 31, 1981.

## MUSEUM EXHIBITS OPERATION FELLOWS

**Hollister Smith**, University of Iowa and St. Louis Medical Museum. *Compilation of data for a syllabus on museum exhibits*, with Mr. Kerry M. Joels, Education Division, National Air and Space Museum, from June 16, 1980, through August 8, 1980.

**Herbert D. Thier**, New York University and Lawrence Hall of Science University of California, Berkeley. *Research and consultation on exhibits operation*, with Mr. Kerry M. Joels, Education Division, National Air and Space Museum, from June 16, 1980, through July 18, 1980.

## FREER FELLOW

**Louisa Cunningham**, The University of Michigan. *Study of literati paintings in the Freer Gallery*, February 1980 through June 1980.

## HIRSHHORN MUSEUM AND SCULPTURE GARDEN INTERNS

**Sarah D. Cash**, Smith College. *Research and study*, with Mrs. Cynthia Jaffee McCabe, Department of Painting and Sculpture, from June 9, 1980, through August 15, 1980.

**Jody De Voll**, George Washington University. *Research and study in the Department of Education*, with Edward P. Lawson, from January 14, 1980, through May 6, 1980.

**Eileen M. Evans**, Michigan State University. *Research and study with a curator of exhibitions*, with Mr. Edward Lawson, Department of Education, from June 9, 1980, through August 18, 1980.

**Lena E. Fransioli**, Harvard University. *Research and study on the permanent collection, bringing the catalogues up to date*, with Ms. Inez Garson, Department of Painting and Sculpture, from June 9, 1980, through August 15, 1980.

**Elizabeth Stevenson**, Stanford University. *Research and study on exhibition design*, with Mr. Joseph Shannon, Department of Exhibits and Design, from June 9, 1980, through August 15, 1980.

**Rodney M. Zerbe**, Bucknell University. *Research and study on museum education*, with Mr. Edward Lawson, Department of Education, from June 9, 1980, through August 15, 1980.

## HIRSHHORN MUSEUM AND SCULPTURE GARDEN CONSERVATION INTERN

**Alfred C. Bedford, III**, Oneonta State University. *Investigation of cold lining techniques applicable to modern painting*, with Mr. Lawrence Hoffman, Conservation Laboratory, from June 9, 1980, through August 15, 1980.

## NATIONAL COLLECTION OF FINE ARTS INTERNS

### Summer Interns

**Nancy Adelson**, Yale University. *Research on Eisenstaedt exhibition scheduled for October 1980*, with Ms. Barbara Shissler, Department of Education, from June 5, 1980, through August 8, 1980.

**Mary Alice Beattie**, Providence College. *Research and study*, with Mrs. Christine Minter Dowd, Renwick Gallery, from June 5, 1980, through August 7, 1980.

**Sara Beckner**, Mills College. *Research and study*, with Mrs. Patricia Chieffo, Office of Research and Professional Training, from June 5, 1980, through August 7, 1980.

**Elaine Cobos**, University of California, Santa Barbara. *Research on the WPA artists and program*, with Mrs. Virginia Mecklenberg, Department of 20th century Painting and Sculpture, from June 5, 1980, through August 7, 1980.

**Ellen Hedlund**, Oberlin College. *Research and study*, with Mrs. Patricia Chieffo, Office of Research and Professional Training, from June 5, 1980, through August 7, 1980.

**Deborah Johnson**, University of Minnesota. *Research and study*, with Mrs. Patricia Chieffo, Office of Research and Professional Training, from June 5, 1980, through August 7, 1980.

**Kate Nearpass**, Columbia University. *Work on the Renwick exhibition, Celebrations*, with Ms. Elaine Eff, Renwick Gallery, from June 9, 1980, through August 8, 1980.

**Elizabeth Turner**, University of Virginia. *Research and study* with Dr. Harry Z. Rand, Department of 20th Century Painting and Sculpture, from June 5, 1980, through August 7, 1980.



*American Studies Intern*

**Nancy Brown**, George Washington University (January–April 1980).

*Conservation Interns*

**Elizabeth Court**, University of Delaware (September–December 1979).

**Florence Herrenschmidt**, Institute of Art and Archaeology, University of Paris (November 1979–August 1980).

**Nancy Heugh**, Cooperstown Conservation Training Program (September 1979–September 1980).

*Education Interns*

**Joan Casazza**, Pennsylvania State University (September–December 1979).

**Elizabeth Gilbert**, George Washington University (January–April 1980).

**Ann Goldstein**, University of California at Los Angeles (January–June 1980).

**Louise Hartman**, Pennsylvania State University (September–December 1979).

**Barbara Henry**, George Washington University (January–April 1980).

*Program in Museum Studies*

**Susan Cumbey**, George Washington University (September 1979–April 1980).

**Kathy Hill**, American University (September 1979–April 1980).

**Roberta Rimpe**, George Washington University (September 1979–April 1980).

COOPER-HEWITT MUSEUM INTERNS

*Sidney and Celia Siegel Fellowships*

**Helen DuBose**, University of North Carolina. *Research and study*, with Mrs. Mary Kerr in the Department of Education, from June 9, 1980, through August 8, 1980.

**Barbara Laskey**, Yale University. *Research and study*, with Mrs. Elaine Dee and Mr. Peter Scherer in the Department of Drawings and Prints, from June 9, 1980, through August 8, 1980.

**Jane Tekulsky**, University of California, Santa Cruz. *Research and study* with Mrs. Dorothy Globus in the Exhibition Department from June 9, 1980, through August 8, 1980.

*Decorative Arts Intern*

**Cynthia Plaut**, State University College, Oneonta, New York. *Work on development of a finders' guide for the decorative arts* with Mr. David McFadden, Department of Decorative Arts, from June 9, 1980, through August 29, 1980.

NATIONAL AIR AND SPACE MUSEUM INTERNS

**Kathryn Olesko**, Ph.D., Cornell University. *Establishment of curatorial records for astronautical artifacts*, with Dr. Paul Hanle, Department of Space Sciences and Exploration, from June 16, 1980, through August 8, 1980.

**Rae Smith**, Delaware State College. *Research and study*, with Mrs. Janet Wolfe in the Education Services Division, from June 9, 1980, through August 1, 1980.

**Cynthia Thompson**, Appalachian State University. *Research and study with reference to handicaps, special education, and services for exceptional individuals*, with Ms. Helen Podolske in the Education Services Division from June 9, 1980, through August 1, 1980.

SMITHSONIAN INSTITUTION ARCHIVES VISITING STUDENT

**Carleton Cunningham**, Gallaudet College. *Archival management and studies*, with Mr. Richard Szary, Smithsonian Archives, from June 3, 1980, through July 25, 1980.



## DIVISION OF PERFORMING ARTS VISITING STUDENT

**Mark Tucker**, Yale University. *Independent study of jazz music and musicians; score notation and research into proposed music to be recorded and performed at the Smithsonian*, with Mr. Martin Williams, Division of Performing Arts, from May 5, 1980, through August 8, 1980.

## SMITH COLLEGE-SMITHSONIAN INSTITUTION PROGRAM IN AMERICAN STUDIES

**Monica Conyngham**, Smith College. *Study of patent models for the textile industry*, with Mr. Gary Kulik, Department of the History of Technology, National Museum of History and Technology, from September 8, 1980, through December 12, 1980.

**Nancy Guyton**, Smith College. *Research on the papers of Emanuel Benson*, with Mr. Garnett McCoy, Archives of American Art, National Collection of Fine Arts, from September 8, 1980, through December 12, 1980.

**Ellen Harrington**, Smith College. *Research on the papers of Charles Willson Peale*, with Dr. Lillian Miller, Charles Willson Peale Papers, National Portrait Gallery, from September 8, 1980, through December 12, 1980.

**Karyn Hausmann**, Smith College. *Study of the technology and marketing of frozen concentrated orange juice*, with Dr. G. Terry Sharrer, Department of the History of Technology, from September 8, 1980, through December 12, 1980.

**Jane Henderson**, Smith College. *Research for an exhibition on American folk portraits*, with Dr. Ellen Miles, National Portrait Gallery, from September 8, 1980, through December 12, 1980.

**Candace Jones**, Smith College. *Research for an exhibition on women's history*, with Ms. Edith Mayo, Department of National History, National Museum of History and Technology from September 8, 1980, through December 12, 1980.

**Traci Williams**, Smith College. *Research on the papers of Joseph Henry*, with Dr. Nathan Reingold and Dr. Marc Rothenberg, Joseph Henry Papers, from September 8, 1980, through December 12, 1980.

## SMITHSONIAN INSTITUTION OPEN STUDY STUDENTS

**Missy Aiken**, Salem College. *Study of preparatorial and curatorial procedures and analyzing data in mammalogy for publication*, with Dr. Richard Thorington, Department of Vertebrate Zoology, National Museum of Natural History.

**Jeffrey Amen**, University of California, Davis. *Study of preparatorial and curatorial procedures in mammalogy*, with Dr. Charles O. Handley, Department of Vertebrate Zoology, and *research on skeletal proportions of rodents*, with Dr. Michael Carleton, Department of Vertebrate Zoology, National Museum of Natural History.

**Dian Belanger**, George Washington University. *Study of museum procedures with emphasis on registration methods*, with Mr. Donald Kloster, Department of National History, National Museum of History and Technology.

**Mary Ames Booker**, Sweet Briar College. *Study of preparatorial and cataloging techniques for, and research on, a group of furniture patent models*, with Ms. Rodris Roth, Department of Cultural History, National Museum of History and Technology.

**Frank Caponio**, Shenandoah College and Conservatory of Music. *Work and study on various aspects of box office and house management*, with Mrs. Sharyn Reitz, Division of Performing Arts.

**Edward Colburn**, Trinity College. *Work and study on technical operations with emphasis on lighting, equipment maintenance, stagecraft and scenery construc-*

tion, and sound reinforcement, with Mr. Harold Closter, Division of Performing Arts.

**David Cunningham**, American University. *Study of registration techniques, especially cataloging*, with Mr. Donald Kloster, Department of National History, National Museum of History and Technology.

**Marianne Curling**, Virginia Commonwealth University. *Research on American brass and copperware craftsmen*, with Mrs. Anne Golovin, Department of Cultural History, National Museum of History and Technology.

**Margaret Fleming**, University of California, Davis. *Research on James Reeside, early 19th-century stage-coach operator*, with Mr. Don Berkebile, Department of the History of Technology, National Museum of History and Technology.

**Ellen Freedman**, Vassar College. *Research, programming, and production of Museum Programs projects*, with Ms. Shirley Cherkasky, Division of Performing Arts.

**Sarah Griffin**, Martha Washington College. *Study of museum accessioning process*, with Mr. Donald Kloster, Department of National History, National Museum of History and Technology.

**Amy Heller**, Hampshire College. *Registrarial work and general research on exhibition, Celebration: A World of Art and Ritual*, with Ms. Elaine Eff, Renwick Gallery.

**Lawrence Howe**, University of Maryland. *Writing feature stories about Smithsonian scientific research for the Smithsonian News Service*, with Mrs. Madeline Jacobs, Office of the Coordinator of Public Information.

**Suellen McKee**, American University. *Study of museum security and procedures for investigation of thefts*, with Mr. Robert Burke, Office of Protection Services.

**Laurie Newman**, Sweet Briar College. *Identification of anthropological photographs in Hrdlicka collection*, with Mr. James Glenn, National Anthropological Archives, National Museum of Natural History.

**Elizabeth Parker**, Gettysburg College. *Study of collections management operations, with emphasis on methods of textile storage, record keeping, and conservation*, with Ms. Rita Adrosko, Department of the History of Technology, National Museum of History and Technology.

**David Personius**, University of Wisconsin, Stevens Point. *Study of curatorial operations of collection of grasses*, with Dr. Thomas Soderstrom, Department of Botany, National Museum of Natural History.

**Mary Sieg**, George Peabody College for Teachers. *Study of archival procedures for tapes and photographic collections of past Folklife Festivals*, with Ms. Elizabeth Beuck, Folklife Program, Office of American Studies.

**Michael Wainston**, American University. *Research for scripting of American Musical Theatre performances in 1980-81 season, including work on production for July 4th Celebration*, with Mrs. Sharyn Reitz, Division of Performing Arts.

**Michelle Wander**, Hollins College. *Study of production methods for American Musical Theatre series*, with Mrs. Peggy A. Martin, Division of Performing Arts.

**John Watson**, George Washington University. *Identification of plants of South America, especially those of Brazil*, with Dr. Lyman Smith, Department of Botany; and *identification and referencing of a collection of Chinese materia medica and study of classical and folk uses of drug agents*, with Dr. Ramunas Kondratas, Department of History of Science, National Museum of Natural History.

**June Wod**, St. Andrew's Presbyterian College. *Study of methods of museum education for the handicapped and the use of museum facilities for handicapped*, with Ms. Jan Majewski, Office of Elementary and Secondary Education.



## NATIONAL AIR AND SPACE MUSEUM INTERNS

### *Summer Interns*

**Linda Bandjunis**, Practical aspects of a public affairs office, with Rita Bobowski, Public Affairs and Museum Services, National Air and Space Museum, from June 23, 1980, through August 1, 1980.

**Julie Birch**, Input and correction of the NASM Periodical Index, with Catherine D. Scott, Library Branch, National Air and Space Museum, from June 23, 1980, through August 1, 1980.

**David Durham**, California Institute of Technology. Wind tunnels and concepts of experimental aerodynamics, with Howard Wolko, Department of Aeronautics, National Air and Space Museum, from July 14, 1980, through August 25, 1980.

**James G. C. T. Gerber**, Princeton University. Research in solar energy as groundwork for a National Air and Space Museum exhibition, with Paul A. Hanle, Space Science and Exploration Department, National Air and Space Museum, from June 9, 1980, through August 15, 1980.

**Eric Huber**, Theory and practice of museum photography, with Dale Hrabak, Photographic Services, National Air and Space Museum, from June 23, 1980, through August 1, 1980.

**Karl S. Schneide**, American University, Washington, D.C. Identification and inventorying of aviation materiel and related items, with Donald S. Lopez, Department of Aeronautics, National Air and Space Museum, from June 9, 1980, through August 15, 1980.

### *National Aeronautics and Space Administration Planetary Geology Interns*

**Charles Herzig**, Dickinson College, Pennsylvania. NASA Planetary Geology Intern Program, with Farouk El-Baz, Center for Earth and Planetary Studies, National Air and Space Museum, from June 9, 1980, through July 18, 1980.

**Melinda Hutson**, University of Minnesota, NASA Planetary Geology Intern Program, with Robert Wolfe, Center for Earth and Planetary Studies, National Air and Space Museum, from June 23, 1980, through August 1, 1980.

### *Center for Earth and Planetary Studies Interns*

**Ellen Lettvin**, University of Michigan. Mariner photography, with Farouk El-Baz, Center for Earth and Planetary Studies, National Air and Space Museum, from July 1, 1980, through August 8, 1980.

**Ellen Stofan**, William and Mary, Virginia. Streaks on Mars, with Farouk El-Baz, Center for Earth and Planetary Studies, National Air and Space Museum, from June 30, 1980, through August 22, 1980.

## CHESAPEAKE BAY CENTER FOR ENVIRONMENTAL STUDIES WORK/LEARN STUDENTS

Mike Bandera  
Elizabeth Budd  
Lee Ann Eareckson  
Jo Goeldner  
Pixie Hamilton  
Janet Hays  
Alex Johnson  
Harry Kalish  
Louise Kowich

David Light  
Elizabeth Marshall  
Susan Merkel  
Nancy Mick  
Cathy Newberg  
Nancy O'Meara  
Debbie Orbach  
Mary Jo Orzech  
Anne Polansky

Debra Prybyla  
Anne Rader  
Paul Seelbach  
Judith Sternfeld  
Tyrone Stinson  
Steve Vail  
Margaret Wilcox  
John Young  
Joanne Zimmermann



SMITHSONIAN TROPICAL RESEARCH INSTITUTE  
SHORT-TERM FELLOWSHIPS IN TROPICAL BIOLOGY

*Scholarly Studies Program*

**Leo Fleishman**, Cornell University.  
**Kenneth Morgan**, University of California at Los Angeles.  
**Patricia Parker**, University of North Carolina.  
**Carol Todzia**, University of Texas at Austin.  
**Gayle Vande Kerchove**, University of Florida.  
**Petra Volkel**, Ruhr University at Bochum.  
**Lani West**, Hopkins Marine Station, Stanford University.  
**Rolf Zell**, Ruhr University at Bochum.

ASSISTANTSHIPS IN TROPICAL BIOLOGY

*Educational Outreach Fund*

**Juan Achurra**, Universidad de Panamá.  
**Brian C. Bock**, University of Tennessee.  
**Christine Copenhaver**, University of Utah.  
**Steve Gaines**, Oregon State University.  
**Eric Gonzalez**, Universidad de Panamá.  
**Rene Mariscal**, Universidad de Panamá.  
**R. Argelis Ruiz**, Universidad de Panamá.  
**Guadalupe Scott**, Universidad de Panamá.  
**Katherine Troyer**, University of California at Davis.  
**German Parra Valencia**, Unidad de Investigaciones Botánicas y Ecológicas.

*EXXON Corporation*

**Juan Achurra**, Universidad de Panamá.  
**Arsenio Arauz**, Universidad de Panamá.  
**Carlos Ayarza**, Universidad de Panamá.  
**Victoria Batista**, Universidad de Bogotá, Colombia.  
**Raghavendra Gadagkar**, Indian Institute of Science, Bangalore, India.  
**Guillermo Garcia de Paredes**, Universidad de Panamá.  
**Eric González**, Universidad de Panamá.  
**Rigoberto González**, Universidad de Panamá.  
**Guillermo Jules**, Universidad de Panamá.  
**René Mariscal**, Universidad de Panamá.  
**Migdalia Martinez**, Universidad de Panamá.  
**Hebe Monteza**, Universidad de Panamá.  
**Eira M. Polo**, Universidad de Panamá.  
**Vielka Quintero**, Universidad de Panamá.  
**Jorge Roldán**, Universidad de Panamá.  
**R. Argelis Ruiz**, Universidad de Panamá.  
**Dalixa Vinda**, Universidad de Panamá.  
**Megumi Yamakoshi**, Instituto Nacional de Pesquisas da Amazonia, Manaus, Brazil.

APPENDIX 7. *Benefactors of the Smithsonian Institution  
in Fiscal Year 1980*

As a trust instrumentality of the United States, the Smithsonian Institution has received federal support since it was established in 1846 to carry out the terms of James Smithson's will. Appropriated funds have long provided important additions to the trust funds, donated by Smithson and subsequent benefactors, to enable the Institution to carry out its responsibilities for research and exhibition of the national collections and maintenance of the valuable objects and records of science, history, and culture entrusted to the Institution.

The Smithsonian's basic trust funds have provided the Institution with the elements of flexibility and independence essential to its creative, innovative growth. Trust funds traditionally have made possible many of the research, acquisition, and educational programs, which are central to the Smithsonian's present resources and achievements.

The Smithsonian is extremely grateful to the foundations, corporations, and individuals listed below for their gifts, bequests, and contributing memberships in the Smithsonian Associates. If the name of any benefactor has been omitted from the following list, it is unintentional and in no way lessens the Smithsonian's appreciation.

GIFTS AND BEQUESTS TO THE SMITHSONIAN

*\$100,000 or more:*

The Japan Foundation	James Smithson Society
The Knapp Foundation, Inc.	United Technologies
NCR Corporation	

*\$10,000 or more:*

American Broadcasting Companies, Inc.	Florists Transworld Delivery Association
Anonymous	Food and Agricultural Organization of the United Nations
The Vincent Astor Foundation	The Ford Foundation
Atlantic Richfield Foundation	Mrs. Katharine L. Graham
Mr. Stephen W. Brener	Joseph H. Hazen Foundation, Inc.
Mrs. Helen W. Buckner	Mrs. Janet A. Hooker
Mary Livingston Griggs & Mary Griggs Burke Foundation	Janet A. Hooker Charitable Trust
The Morris and Gwendolyn Cafritz Foundation	Institute for Educational Affairs, Inc.
Dayton Hudson Foundation	Intercoiffure America
Mr. Edward R. Downe, Jr.	International Union for the Conservation of Nature
The Max & Victoria Dreyfus Foundation Inc.	The J. M. Kaplan Fund, Inc.
The Eppley Foundation for Research Incorporated	Mrs. Karen Johnson Keland
Mr. Thomas M. Evans	Samuel H. Kress Foundation
EXXON Corporation	Lighting Business Group of General Electric
	Mr. Richard Manoogian

*\$10,000 or more—continued*

Ambassador Marquita M. Maytag	The Rockefeller Foundation
Metropolitan Study Center for Asian Art	Mr. Arthur Ross
The Ambrose Monell Foundation	Arthur Ross Foundation
Philip Morris Incorporated	Mary Horner Stuart Foundation
National Geographic Society	The Weatherhead Foundation
The Nature Conservancy	The Women's Committee of the Smithsonian Associates
Mr. Robert C. Nelson Jr.	World Wildlife Fund
New York State Council on the Arts	Estate of D. Lorraine Yerkes

*\$1,000 or more:*

Adelphi University	Dr. G. Arthur Cooper
Adolphus Foundation	Corning Glass Works
AKC Fund, Inc.	Mr. and Mrs. John A. Corroon
Alpha Xi Delta Foundation	Mrs. Priscilla Cunningham
The Alvord Foundation	Mrs. Frederic Arnold Daum
Amax Foundation, Inc.	Dr. and Mrs. Richard G. Day, Jr.
The American Association of Petroleum Geologists	Mrs. Phyllis Dearborn-Massar
The American Association of Petroleum Geologists Foundation	Mr. David Dibner
American Floral Services Inc.	Mr. Paul W. Doll
Amos Press, Incorporated	Mr. and Mrs. Gaylord Donnelley
Anaconda Copper Company	The Max & Victoria Dreyfus Foundation Inc.
Anonymous	Mr. and Mrs. Saul Dunitz
Arkansas Florists Association, Inc.	Joel & Anne Ehrenkranz Foundation Inc.
Badger Meter Foundation, Inc.	Embassy of the Republic of Kenya to the U.S.
Mrs. Peter L. Ballantyne	Estate of David E. Finley
J. M. R. Barker Foundation	Ms. Patricia A. Fletcher
Mr. George Barlow	Ford Fund
The Barra Foundation, Inc.	Foremost-McKesson Foundation, Inc.
Mrs. Evelyn F. Bartlett	Garrett Corporation
The Bass Foundation	Mrs. Walter Gellhorn
Mr. David P. Becker	General Refractories Company
Mrs. Arthur Belfer	Sumner Gerard Foundation
Belgian American Educational Foundation Inc.	Getty Oil Company
Beneficial Foundation, Inc.	Mr. and Mrs. Morton Globus
Miss Julia A. Bissell	Mr. Bernard H. Goldstein
Mr. Leigh B. Block	Mr. Preston Greene
Louis W. Bowen Incorporated	The Griffis Foundation Inc.
The Bristol-Myers Fund	Gulf Research and Development Company
Mrs. Keith S. Brown	Hallmark Cards Inc.
Brunschwig & Fils, Inc.	Dr. Gary Hansen
Estate of Russell P. Bullinger	Mr. Peter T. Hanson
The Bundy Foundation	Harvard University
Mr. and Mrs. John A. Burnham, Jr.	Mr. August Heckscher
California Arts Council	Mr. Henry J. Heinz II
Mrs. Elisabeth Carson	Mrs. Amy E. Higgins
Mrs. John B. Carter, Sr.	Mr. and Mrs. Joseph H. Hirshhorn
Clarence House Imports, Inc.	Mr. and Mrs. Wallace F. Holladay
Mr. and Mrs. Willard G. Clark	Mrs. Herbert Hoover
Consolidated Edison Company of New York, Inc.	Hughes Tool Company



*\$1,000 or more—continued*

IBM Corporation	Miss Agnes Saalfield
International Trust for Conservation	The Scherman Foundation, Inc.
International Harvester Company	Sarah I. Schieffelin Residuary Trust
Mrs. Sally Faile Jeancon	Mrs. Robert F. Shapiro
Jewish Welfare Foundation	Jean S. & Fredrick A. Sharf Fund
The Johns Hopkins University Press	Mrs. Charles Simon
Mrs. Dorothy Johnson	Mrs. Adele Simpson
Mrs. Ruth Cole Kainen	The L. J. & Mary Skaggs Foundation
Miss Marguerite H. Kellogg	C. G. Sloan & Co. Inc.
Kent-Lucas Foundation	Mr. H. Russell Smith
Kettering Fund	Society of American Florists & Ornamental Horticulture
Mr. and Mrs. Gilbert H. Kinney	Mrs. Eloise A. Spaeth
Estate of Fred Klein	Sperry Corporation
Mr. Frederick R. Koch	St. Joe Minerals Corp.
Dr. and Mrs. Marvin C. Korengold	Mrs. J. M. Stangl
Lee/Jofa	Stavropoulos Corporation
Lenox, Incorporated	Mr. and Mrs. Harrison I. Steans
Lindblad Travel, Inc.	Miss Elizabeth Stein
Howard & Jean Lipman Foundation Inc.	Sterling Silversmiths Guild of America
Mrs. Elizabeth Lorentz	The Florence Louchheim Stol Foundation
Mrs. Kathleen S. Louchheim	Mr. and Mrs. E. Hadley Stuart, Jr.
Marathon Oil Foundation Inc.	Mr. A. Alfred Taubman
Mr. and Mrs. William A. Marsteller	Teleflora Inc.
Dr. Brian H. Mason	Tewksbury Antiques
Matthey Bishop, Inc.	Dr. John S. Thacher
Dr. and Mrs. Abraham Melamed	Miss Helen R. Thompson
The Charles E. Merrill Trust	Time-Life Books Inc.
Eugene and Agnes E. Meyer Foundation	Tom & Barnt Limited
Middle Atlantic Florist Association	The Trilateral Commission
Miss Marian Mitchell	Mrs. Elizabeth S. Trippe
National Audubon Society, Inc.	Mrs. Barbara Tuchman
Paula and David Newman	Undersea Medical Society
The NL Industries Foundation, Inc.	Mrs. Anne Ford Uzielli
The Ohrstrom Foundation, Inc.	Mr. and Mrs. John Van Hanford, Jr.
Mr. and Mrs. Dan Oppenheimer	Mr. and Mrs. Claus Von Bulow
Outdoor Amusement Business Association Inc.	Wallcovering Information Bureau Inc.
The Outlet Company	The Ellen Bayard Weedon Foundation
Owens-Corning Fiberglas Corporation	Miss Leslie Anne Weeks
Flynn and Martin Patterson	Ralph J. Weiler Foundation
The Pfaltzgraff Company	Miss Nina W. Werblow
Mr. and Mrs. Walter N. Pharr	Mrs. Annie B. Wetmore
The Pioneer Foundation, Inc.	Mr. Otto K. Wetzel, Jr.
Mr. Lloyd E. Raport	Wholesale Florists & Florist Suppliers of America
Rare Animal Relief Effort, Inc.	Mrs. Claire A. Williams
Mrs. Sara D. Redmond	Woodward & Lothrop Incorporated
The Rhode Island Historical Society	World Wildlife Fund International
Mrs. William L. Richards	The Wyeth Endowment for American Art
Anne S. Richardson Fund	Xerox Corporation
Dr. and Mrs. S. Dillon Ripley	
Mrs. Margaret W. Root	

*\$500 or more:*

American Philosophical Society	Roe Kasian Designs Inc.
Amicus Foundation Inc.	Kerr-McGee Corporation
Anonymous	Mr. Seymour H. Knox
Mrs. James H. Beal	Arthur and Nanette Kreizel
Mrs. Arthur Belfer	Miss Annaline Levi
Miss Doris L. Blau	Mrs. Deborah S. Mandeville
Mrs. Ann W. Brewer	Mr. James Marcus
Mr. Martin A. Buzas	Miss Margaret D. McKee
C&P Telephone	Mr. Gene Moore
Carolina/Virginia NCR Users Group	Alan Moss Studios Inc.
The Catesby Foundation	The Nature Conservancy
Mrs. Miles Chubb	Miss Alice L. Norris
Coach Leatherware Collection	North Carolina Florist Association
Ron and Penney Dante	Mrs. Harris Oppenheimer
Miss Anne S. Dayton	Mr. and Mrs. Arthur S. Penn
Mrs. Marie De Menil	Les Prismatiques
Ms. Kathryn F. Donaldson	Mrs. Sidney Quitman
John C. Edelmann Galleries	Riverway Co.
Estate of Edith Ehrman	Mr. William Robertson
Mr. Ray Eilers	S. H. and Helen R. Scheuer
Dr. William E. Evans	Mrs. Helen M. Scholz
William and Martha Ford Fund	Showmans League of America Aid
Dr. Kurt Fredriksson	Account
Dr. and Mrs. Thomas H. Fritts	Mr. Sidney N. Shure
Mr. and Mrs. Morton Globus	Mrs. Otto L. Spaeth
Miss Genevieve H. Goodwin	Mr. Garrick C. Stephenson
Great Eastern Numismatic	Lewis & Rosa Strauss Memorial Fund
Association	The Taubman Company Inc.
Mr. Richard V. Hare	Mrs. Lila Tyng
Miss Pauline L. Harrison	Unitarian Church
The Sidney L. Hechinger Foundation	Mrs. Robert D. Van Roijen
The Henfield Foundation	Vice Versa
Mr. and Mrs. Stanley Herzman	Washington Unit Florists Transworld
Mrs. Sheila Isham	Delivery Association
IU International	Ms. Suzanne Weinstein
Miss Lucille McIntyre Jewett	The Women's Auxiliary of the Inter-
Mr. and Mrs. Charles D. Johnson	national Chiropractors Association
Mrs. Jacob M. Kaplan	

We also gratefully acknowledge all other contributions to the Institution.

## SMITHSONIAN ASSOCIATES • CONTRIBUTING MEMBERS

The Contributing Members of the Smithsonian National Associates support the Institution's work through annual contributions of \$50, \$100, \$250, and \$500.

The James Smithson Society was created in 1977 to encourage and recognize major gifts to the Smithsonian Institution. This Society, which is the highest order of the Contributing Memberships in the Smithsonian Associates, is comprised of two membership categories. Annual Members are individuals who make unrestricted contributions of \$1,000 to \$24,999 annually. Life Members are those who give \$25,000 or more either in monetary gifts or additions to the collections.

The Smithsonian Institution gratefully acknowledges the generous support of the James Smithson Society 1980 Annual Members, Life Members, and the Contributing Membership of the Smithsonian Associates.

*JAMES SMITHSON SOCIETY*  
*1980 Life Members*

SMITHSON

Sharon and Vincent Melzac

GOLD

Richard R. Bains  
Mr. and Mrs. F. John Barlow\*  
Lee Bronson  
George E. Burch, M.D.  
Helen and George Capps  
Mrs. Howard F. Cook  
Mrs. Walter B. Ford II

Mr. George Garfield  
Mr. Julius Garfield  
Arthur Ross\*  
Alice Henderson Rossin  
Samuel Rubin  
Mr. and Mrs. Robert Vojvoda

SILVER

Joe L. and Barbara B. Allbritton\*  
Donald Croom Beatty  
Richard A. Bideaux  
Edward R. Downe, Jr.  
Olin Dows  
Mr. and Mrs. Chaim Gross  
Norma B. Hazen  
Mr. Edward Henning  
Dr. and Mrs. Howard Ihrig\*  
Mrs. George H. Jacobus  
Mr. and Mrs. Jacob Kainen\*

Lewis Kurt Land  
Ms. Betty H. Llewellyn\*  
Richard A. Manoogian  
Mr. and Mrs. W. A. Moldermaker  
Mortimer L. Neinken  
Wallace R. Persons  
Kathleen and Edward Pflueger  
Edward J. and Nancee Slattery  
June and Leo F. Stornelli\*  
Dr. and Mrs. David J. Tepper\*

BRONZE

Mr. Joseph V. Alhadeff  
Mrs. Frederic C. Bartlett  
Mr. and Mrs. Arthur J. Burstein  
Mr. and Mrs. Barnet Burstein  
Mr. and Mrs. Hyman Burstein  
Mr. and Mrs. Maxwell Burstein  
Dr. and Mrs. George L. Compton  
Dr. and Mrs. Roger D. Cornell  
Edwin J. and Elizabeth F. Cunningham  
Dr. and Mrs. Dan Feriozi  
Dr. and Mrs. Lamont W. Gaston  
Mr. and Mrs. C. Paul Gilson  
Stephen P. Gott  
Paul Horgan  
Karen Johnson Keland  
Harry E. Lennon  
Mrs. Adele Lozowick

Mr. John A. Masek  
Sandy Levey Miller  
Dr. Joe H. and Mary Jane Mullins  
Mrs. Rudolf Pabst  
Mrs. Howard J. Sachs  
Mr. Peter G. Sachs  
Mr. and Mrs. Janos Scholz  
Mrs. Helen Farr Sloan  
Earl J. Spangler  
Norman H. Stavisky  
Janet Newbold Stewart  
Mr. Juan Terry Trippe  
Mr. and Mrs. C. C. Wang  
Dr. Adolfo Villalon  
Mr. and Mrs. Archibald M. and  
Cuc K. Withers

---

\* Life Members previously awarded a Smithson Society medal for other gifts.



*Membership (Annual and Life)*

- Mrs. Anni Albers\*\*  
Mr. David K. Anderson\*\*  
Mr. and Mrs. William S. Anderson  
Hon. and Mrs. Walter H. Annenberg  
Mr. Ronald P. Anselmo\*\*  
Mr. Scott R. Anselmo\*\*  
Mrs. Joan Hay Baizerman\*\*  
Mr. Geoffrey B. Baker  
Mr. and Mrs. John E. Baker II  
Mr. and Mrs. Perry R. Bass  
Mr. and Mrs. Harry Hood Bassett  
Mr. Preston R. Bassett\*\*  
Mr. Henry C. Beck, Jr.  
Mrs. Henry C. Beck, Jr.\*\*  
Mr. and Mrs. Clay P. Bedford\*\*  
Mrs. Edward B. Benjamin\*\*  
Mr. and Mrs. John A. Benton\*\*  
Dr. and Mrs. William B. Berry\*\*  
Mr. and Mrs. Gerald M. Best\*\*  
Dr. and Mrs. B. Narayana Bhat\*\*  
Mrs. Harry Payne Bingham  
Hon. and Mrs. Robert O. Blake  
Mr. and Mrs. Robert Blauner\*\*  
Mr. and Mrs. Leigh B. Block\*\*  
Mr. Allan J. Bloostein  
Mr. Winton M. Blount  
Mr. and Mrs. Thornton F. Bradshaw  
Mr. Nicholas F. Brady  
Mr. Alfred P. Brooks  
Mr. and Mrs. Keith S. Brown  
Mrs. David K. E. Bruce\*\*  
Mrs. Susie Brummer  
Dr. Ruth Dowling Bruun and  
Dr. Bertel Bruun\*\*  
Hon. Wiley T. Buchanan, Jr.  
Hon. and Mrs. Philip W. Buchen  
Mrs. Jackson Burke  
Dr. and Mrs. Benjamin Hubbard  
Caldwell, Jr.\*\*  
Major General and Mrs. Daniel S.  
Campbell\*\*  
Mrs. Catherine B. Cantrell\*\*  
Mr. Lawson J. Cantrell, Jr.\*\*  
Allan Caplan\*\*  
Mr. Charles W. Carroll  
Mrs. John B. Carter, Jr.  
Hon. and Mrs. Henry E. Catto, Jr.  
Mr. and Mrs. George P. Caulkins, Jr.  
Hon. and Mrs. Robert Horne Charles  
Mr. and Mrs. E. Taylor Chewning, Jr.  
Dr. and Mrs. Robert C. C. Chiu\*\*  
Mr. and Mrs. James H. Clement  
Mr. Thomas G. Cleveland\*\*  
Mr. Robert L. Coleman\*\*  
Mr. Joseph E. Conner  
Mr. and Mrs. Gardner Cowles  
Mr. Marshall B. Coyne  
Mrs. Mary Faye Craft  
Miss Louise Crane  
Mr. and Mrs. Kenneth M. Crosby  
Mr. Joseph F. Cullman III  
Mr. Eric L. Cummings  
Dr. and Mrs. Bruce E. Dahrting II\*\*  
Mr. and Mrs. Leo A. Daly III  
Mr. and Mrs. John H. Daniels  
Mr. and Mrs. Justin Dart  
Hon. Shelby Cullom Davis  
Mr. and Mrs. Walter Davis  
Mr. and Mrs. Stanley R. Day  
Mr. Morse G. Dial, Jr.  
Ms. Kathryn F. Donaldson  
Mrs. Kathryn W. Donaldson  
Mr. James C. Donnell II  
Mr. and Mrs. Gaylord Donnelley  
Mr. John T. Dorrance, Jr.  
Mr. John R. Doss\*\*  
Mr. and Mrs. Leslie Douglas  
Mr. Willard D. Dover\*\*  
Mr. and Mrs. Morton Downey  
Dale B. Dubin, M.D.\*\*  
Willis H. duPont\*\*  
Mr. Duncan L. Edwards\*\*  
Mr. and Mrs. J. A. Elkins, Jr.  
Mr. Joseph M. Erdelac\*\*  
Mr. and Mrs. Thomas M. Evans\*\*  
Mrs. Eric Eweson  
Mr. Charles E. Exley, Jr.  
Mr. Charles T. Fisher III  
Hon. William H. G. FitzGerald  
Hon. John Clifford Folger  
Mrs. John Clifford Folger  
Mr. and Mrs. Gerald Freed  
Rear Adm. and Mrs. Edwin Gaines  
Fullinwider\*\*  
Dr. and Mrs. Lawrence Andrew  
Funt\*\*  
Mrs. George A. Garrett  
Mr. and Mrs. Gordon P. Getty  
Mr. Alfred C. Glassell, Jr.  
Dr. and Mrs. Wilbur J. Gould\*\*  
Mr. Robert C. Graham, Sr.  
Mr. and Mrs. William B. Graham  
Mr. Jerome L. Greene\*\*  
Mr. and Mrs. John Bradley Greene

---

\*\* Life Members.

### *Membership (Annual and Life)*

Mr. and Mrs. Gilbert C. Greenway  
Mr. and Mrs. Alton B. Grimes  
Mrs. Lloyd P. Griscom  
Mr. John W. Gruber  
Mr. Leo S. Guthman  
Evelyn Annenberg Hall\*\*  
Dr. Armand Hammer\*\*  
Mr. Gordon Hanes  
Mrs. Richard Harkness\*\*  
Mrs. W. Averell Harriman  
Mrs. Alfred C. Harrison  
Mr. and Mrs. Don C. Harrold\*\*  
Mr. Joseph H. Hazen  
Lita Annenberg Hazen\*\*  
Mr. and Mrs. Patrick Healy III  
John and Lucia Heard  
Mr. Andrew Heiskell  
Mrs. Francis Tracy Henderson\*\*  
Mr. and Mrs. Robert R. Herring  
Mrs. Edith Mansfield Hills\*\*  
Mr. and Mrs. Joseph H. Hirshhorn\*\*  
Mr. and Mrs. Wallace Holladay  
Janet A. Hooker\*\*  
Mr. Allan Oakley Hunter  
Mr. R. L. Ireland III  
Hon. and Mrs. John N. Irwin II  
Mr. and Mrs. Sam Israel, Jr.  
Mr. George H. Jacobus  
Mr. and Mrs. George D. Jagels  
Mr. and Mrs. George Frederick  
Jewett, Jr.  
Mr. Samuel C. Johnson  
Mr. and Mrs. J. E. Jonsson  
Mrs. Virginia Kettering Kampf  
Mrs. Garfield Kass  
Mrs. Louise Page Kastner\*\*  
Mr. and Mrs. Louis Kaufman\*\*  
Mr. and Mrs. Richard B. Kaufmann  
Mr. James F. Keenan  
Mr. and Mrs. James M. Kemper, Jr.  
Hon. and Mrs. W. John Kenney  
Hon. and Mrs. Randolph A. Kidder  
Mr. and Mrs. Gilbert H. Kinney  
Mr. F. M. Kirby  
Dr. Arthur A. and Marie L. Kirk\*\*  
Mr. and Mrs. Peter Merrill Klein\*\*  
Hon. and Mrs. Philip M. Klutznick  
Mr. and Mrs. Samuel W. Koffler\*\*  
Mr. David Landau\*\*  
Mr. and Mrs. R. Heath Larry  
Dr. Morris P. Leibovitz\*\*  
Mr. and Mrs. L. E. Leininger\*\*

Mrs. Sara L. Lepman\*\*  
Mr. and Mrs. John Levey\*\*  
Mr. and Mrs. Robert Levey\*\*  
Mr. and Mrs. Sydney Lewis\*\*  
Mr. Harold F. Linder  
Mrs. Jean Chisholm Lindsey  
Mr. and Mrs. John A. Logan\*\*  
Mr. and Mrs. Jack Lord\*\*  
Mr. H. M. Love  
Jack and Betty Lou Ludwick  
Mr. Edmund C. Lynch, Jr.  
Mrs. Edward Macauley  
Hon. and Mrs. George C. McGhee  
Hon. and Mrs. Robert M. McKinney\*\*  
Mr. Malcolm MacNaughton  
Mr. and Mrs. Donald McNeely  
Mr. Henry S. McNeil  
Lt. Gen. and Mrs. Sam Maddux, Jr.  
Mrs. Robert A. Magowan\*\*  
Dr. and Mrs. Leo J. Malone\*\*  
Mr. and Mrs. Leonard H. Marks  
Mr. and Mrs. J. Willard Marriott  
Hon. and Mrs. William McChesney  
Martin, Jr.  
Mr. Henry W. Meers  
Jack L. Messman\*\*  
Dr. Ruben F. Mettler  
Mrs. Edmund C. Monell\*\*  
Dr. Walter A. H. Mosmann\*\*  
Fredric Mueller\*\*  
Dr. Joseph L. Murray  
Marvin Murray, M.D., Ph.D.\*\*  
Mrs. Nancy Brown Negley  
Dr. James Brooks Newbill\*\*  
Hon. and Mrs. Paul H. Nitze  
Mr. and Mrs. John R. Norton III  
Hon. and Mrs. R. Henry Norweb\*\*  
George L. Ohrstrom  
Mr. and Mrs. Ricard R. Ohrstrom  
Mr. and Mrs. Henry K. Ostrow\*\*  
Hon. Daniel Parker  
Mrs. Jefferson Patterson  
Mr. and Mrs. James R. Patton, Jr.  
Judge and Mrs. G. Burton Pearson\*\*  
Mr. C. Wesley Peebles  
Mr. and Mrs. Charles Emory Phillips  
Mr. and Mrs. Charles M. Pigott  
Mr. and Mrs. George S. Pillsbury  
Mr. and Mrs. Louis F. Polk  
Mr. and Mrs. John A. Pope\*\*  
Mr. and Mrs. Malcolm Price  
Mrs. Abraham Rattner\*\*

---

\*\* Life Members.

### *Membership (Annual and Life)*

Mr. W. G. Reed	Miss Marilyn L. Steinbright
Mr. John Paul Remensnyder**	Mr. and Mrs. E. Hadley Stuart, Jr.**
Hon. Frederick W. Richmond	Mr. David A. Sutherland
Mr. and Mrs. Robert B. Ridder	Mr. J. Fife Symington III
Mr. and Mrs. Walter T. Ridder	Dr. Hans Syz**
Mr. and Mrs. Ralph C. Rinzler**	Mrs. Katharine Sergava Sznycer**
Mrs. Dorothy Hyman Roberts	The Drs. Yen and Julia Tan**
Mr. Thomas M. Roberts**	Mr. Hobart Taylor, Jr.
Mr. John J. Robertson	Mr. and Mrs. Vernon Taylor, Jr.**
Mr. and Mrs. Hamilton Robinson	Mrs. Edith Hale Thomas**
Mr. Ellis H. Robison**	Hon. and Mrs. Clark W. Thompson
Dr. and Mrs. Milton L. Rock	Richard W. Thomssen**
Mr. Laurance S. Rockefeller	Mr. F. A. Thorndike
Judge Martin J. Roess**	Mr. Bardyl R. Tirana**
Richard G. Rogers, Jr.**	Mr. and Mrs. Walter R. Truland
Mrs. Helen Goodwin Rose**	Mr. and Mrs. Milton Turner**
Hon. Kenneth Rush	Mr. and Mrs. Wynant D. Vanderpool, Jr.
Mr. William R. Salomon	Mr. and Mrs. C. Woods Vest, Jr.
Mr. and Mrs. B. Francis Saul II	Dr. and Mrs. Francis S. Walker**
Mr. Harry I. Saul**	Mr. Raymond J. Wean, Jr.
Sen. and Mrs. Hugh Scott**	Mr. Richard W. Weatherhead**
Mr. and Mrs. William L. Searle	Mr. Charles D. Webster
Mr. and Mrs. Arthur A. Seeligson, Jr.	Mr. Harry Weese
Mr. and Mrs. Frates Seeligson	Mr. Caspar W. Weinberger
Mrs. George M. Seignious II	Mr. and Mrs. Thomas E. Whiteley**
Mr. and Mrs. William M. Siegel	Mr. Brayton Wilbur, Jr.
Mr. and Mrs. Morton Silverman**	Mrs. Leonard E. Wilkinson**
Mr. and Mrs. Leonard L. Silverstein	Mr. Leonard John Wilkinson**
Mr. David E. Skinner	Mrs. Thomas J. Williams**
Mr. David G. Skinner	Mr. and Mrs. Morton H. Wilner
Mrs. Frances F. Smith	Mr. Edward Foss Wilson
Hon. and Mrs. Gerard C. Smith	Mr. and Mrs. David Wintermann
Mr. and Mrs. Robert H. Smith**	Mr. and Mrs. Laurence C. Witten II**
Mrs. Otto Spaeth**	Mr. and Mrs. David O. Woodbury**
Stuart M. Speiser**	Mrs. Stanley Woodward**
Mr. Benjamin Stack**	Mr. James O. Wright
Mr. Harvey G. Stack**	Mr. and Mrs. James Y. M. Wu**
Mr. Norman Stack**	Mr. Barry Yampol**
Dr. and Mrs. Richard F. S. Starr**	
Mrs. Edith C. Steinbright	

### *CONTRIBUTING MEMBERSHIP*

#### *Sustaining Members (\$500 and above)*

Mr. and Mrs. Ellis B. Anderson	Mr. Paul L. Davies, Jr.
Mr. and Mrs. Ned S. Arbury	Mr. and Mrs. John J. Feeney
Mrs. L. M. Aroniss	Susan R. Fellows
Amb. Antonio F. Azeredo da Silveira	Col. Clarence D. Fried, Ret.
Mr. and Mrs. John Bartlett	Mr. and Mrs. Geoffrey S. Fuller
E. Paul Charlap	Rachel Gay
Arthur J. Curry	Ms. Frances E. Gibson

---

\*\* Life Members.



*Sustaining Members (\$500 and above)*

Ms. Susan Goldman  
Mr. Abner J. Golieb  
Mr. W. J. Handelsman  
Mr. and Mrs. Jerzy J. Hauptmann  
R. Bruce Hunter  
Robert E. Johnson  
Mr. A. Atwater Kent, Jr.  
Marilyn and William Lane  
Mr. Edmund W. Littlefield  
Mrs. John E. Long

Mrs. Ruth Lord  
Mr. and Mrs. Frederick P. Mascioli  
Dr. Raymond Mize, Jr.  
Mr. and Mrs. Robert P. Mountain, Jr.  
Mr. and Mrs. Richard K. Preston  
Ms. Norma Reis  
Kenneth E. Shannon  
Mr. Barry Strauss  
Mrs. Arthur H. Sulzberger  
Mrs. Gardiner Symonds

*Sponsoring Members (\$250 and above)*

Mr. and Mrs. David R. Anderson  
Myron Anderson  
G. J. Andrews  
Mr. and Mrs. R. S. Antes  
Mrs. Earl W. Barnes  
Winifred H. Bauer  
Mr. Ralph B. Beals  
Col. and Mrs. George C. Berger  
Mr. and Mrs. John H. Bernard  
Mr. and Mrs. Seymour Bernett  
Mr. and Mrs. Frederic F. Bigio  
Frederick Blachly  
Mr. Christopher T. Blayney  
Mr. Robert K. Blum  
Mr. and Mrs. David H. Blumberg  
Dr. and Mrs. S. B. Brinkley  
Mr. F. Carroll Brown  
Patricia L. Brown  
Mr. and Mrs. Frederick F. Burks  
Mr. and Mrs. James J. Burr  
Dr. and Mrs. J. A. Burwell  
Dr. Cesar A. Caceres  
Mr. and Mrs. J. A. Carrera  
Mr. and Mrs. Leo A. Carten  
Mrs. Harold W. Cheel  
Mr. and Mrs. Page B. Clagett  
Mr. and Mrs. Jerald L. Clark  
Mr. W. C. Cobb  
Edward L. Cochrane, Jr.  
Mr. and Mrs. J. A. Corbet  
Alexander D. Crary  
Mr. and Mrs. John D. Crow  
Capt. and Mrs. R. L. Daniels  
Mr. and Mrs. Keith Davis  
Mr. and Mrs. David R. Dear  
Arthur F. and Isadora Dellheim  
John Dimick  
Mr. Alden Lowell Doud  
Elinor and Harry Emlet  
Mr. and Mrs. M. F. Flaherty  
Albert A. Folop  
William C. Frogale

M. F. George  
Mrs. Ted R. Goldsmith  
Mr. and Mrs. Bernard Green  
Richard P. Grill  
Morella R. Hansen  
Miss Annabelle Heath  
Mr. and Mrs. Stephen Herman  
Nona G. Herndon  
Mr. and Mrs. William B. Hewitt  
Mr. and Mrs. Robert M. Hinton  
Mrs. Raymond J. Howar  
Mr. and Mrs. Charles R. Hubatka III  
Mr. and Mrs. Phillip S. Hughes  
Mrs. S. T. English  
W. D. Jackson  
Dr. John R. Jacoway  
Mr. Charles W. Jones  
Mrs. George C. Keiser  
Mrs. H. L. Kempner, Jr.  
Mr. Walter H. Kidd  
Dr. Robert Krasner  
Mr. E. C. Kubik  
Agatha Larson  
Hon. Robert E. Lee  
Mr. and Mrs. Finlay Lewis  
David H. Lloyd  
William A. Long  
Laura and Terrence McAuliffe  
Mr. and Mrs. Philip L. McHugh  
Ms. Billie G. Matheson  
Marcus and Wanda Mehtonen  
Dr. David B. Michaels  
Mr. and Mrs. E. Kirkbride Miller  
Mr. Charles W. Morris  
Jerry L. Mungo  
Comdr. and Mrs. Lester E. Ogilvy  
Mr. and Mrs. Gerald H. Patrick  
Helen Ann Patton  
Louis Peller  
William C. Penick  
Mr. and Mrs. Douglas S. Price  
Dr. Michael J. Reilly

*Sponsoring Members (\$250 and above)—continued*

Mr. and Mrs. Roy R. Russo	Mary S. Swanson
Mr. David Saunders	Richard O. Swim
Dr. James G. Schwade	David S. Turner
James G. Shakman	S. J. Ungar Foundation
Mr. Donald W. Shaw	Caroline E. Van Mason
Mr. and Mrs. Gerard E. Shelton	Mr. Dale E. Vaughn
Mr. and Mrs. George E. Sherman	Mr. Peter C. White
Mr. and Mrs. Milton L. Shurr	Mr. and Mrs. Grover C. White, Jr.
Dr. Lionel J. and Mrs. Janet M. Skidmore	Mrs. Vivian Wildman
Mr. and Mrs. James Smulian	Ms. Louise Woerner
Hugh M. and Marilyn M. South	Mr. and Mrs. Joseph M. Zorc
Mr. and Mrs. A. Stutzer	Mr. and Mrs. Barry Zorthian

*Donor Members (\$100 and above)*

Mr. and Mrs. Leonard L. Abel	Dr. Doris B. Autry
Lee Abramowitz	Mr. Fred C. Babcock
Mrs. David C. Acheson	Mildred Bach
Mr. Bruce F. Ackinclose, Jr.	Mr. and Mrs. Norman G. Bach
Mrs. Jobeth J. Adamson	Morton W. and Joyce S. Bachrach
Mrs. Barbara Jean Ageno	Dorothy and Harold Baer
Dr. Nevin E. and Barbara L. Aiken	Mr. George G. Baetz
Mr. and Mrs. Donald C. Alexander	Dr. Bernard W. Bail
W. W. Alexander	Merrily Baird
James E. Alford	Mr. and Mrs. Ernesto Baizan
Mr. Robert L. Alford	Geraldine R. Baker
Mr. and Mrs. H. K. Allen	Mr. Warren Baker
Woody A. Allen	Dr. and Mrs. H. H. Balch, Jr.
Mrs. Carolyn Alper	Joseph J. and Elizabeth B. Ball
Frederick J. Altman	Leo T. Barber, Jr.
Mr. and Mrs. Aaron M. Altschul	Mr. Robert D. Barclay
Mr. and Mrs. H. Max Ammerman	Dr. and Mrs. Charles O. Barker
Mr. and Mrs. Robert Amory	Mr. Jean L. Barker
Ann M. Anderson	Jeffrey O. and Norma H. Barnes
David and Nancy Anderson	Andrew Barr
Mrs. E. T. Anderson	Ms. Janine F. Barre
Mrs. E. Ross Anderson	Capt. Celia Barteau
Mr. and Mrs. Emmet D. Anderson	John P. Bartlett
Joseph R. Anderson	W. R. Barwick
Leslie E. Anderson	Ralph S. and Jeanne Bass
Mr. and Mrs. John S. Anderson	Mr. James Bateman
Mr. and Mrs. Paul B. Anderson	Mrs. Alice G. Bauer
Mrs. Paul S. Anderson	Mr. and Mrs. Eugene W. Baxter
Mr. and Mrs. William Y. Anderson	Mr. J. Fred Beamer
Mrs. John W. Anderson II	Mr. Donald R. Bean
Miss Marcia Ann Appel	Mr. and Mrs. William Bean
Mr. and Mrs. John A. Arbib	Colleen and Hunter Beaumont†
John D. Archbold	Eugene H. Beck
Mr. and Mrs. Liston Archer	Ms. Janet T. Beck
John J., Mary F., and Guy M. Arcuri	Hon. and Mrs. Ralph L. Becker
Mr. and Mrs. T. J. Arneson, Jr.	Mr. and Mrs. William L. Becker
Col. and Mrs. Arpod Artwohl	Arnold R. Beckhardt
Joseph S. Asin	Charles Beer
Mr. and Mrs. John W. Auchincloss	Dr. Bruce A. Bell

*DONOR MEMBERS (\$100 and above)—continued*

Mrs. Jack Bender	Mr. J. Bruce Bredin
Mr. and Mrs. E. E. Benedict	Terence R. and Vivien C. Brewer
William R. Benham	Mr. and Mrs. Stephen B. Brickel
Mrs. Mills Bennett	John B. Bricker
Mr. and Mrs. Edward Benson	Robert L. Bridges
Lt. Col. S. Woodruff Bentley	Dr. and Mrs. Clifton H. Briggs
Merrill Berkley	Ms. Dorothea T. Bristol
Samuel W. Bernheimer	Mr. Ronald C. Britt
Mr. and Mrs. Max N. Berry	Weldon C. and Marthasu K. Britton
Paula and Steven Bershader	Mr. Harvey K. Brock
Margaret Bethany	Mrs. George H. Brodie
L. W. Bill	Mr. Michael Bromwich
Mrs. A. F. Binney	John A. Bross
Mr. and Mrs. F. Douglas Birdzell	Mrs. Maude E. Brown
Mr. H. Harold Bishop	Mr. Preston Brown
Gerald and Sara Bjorge	Mr. and Mrs. Ralph H. Brown
Mr. and Mrs. Donald Eric Black	Guy J. Brunacci
Mr. John L. Black	Mrs. Stephen C. Bruno
Mrs. Page Blackstock	Anne Brunsdale
Mr. William C. Blanks	Mr. and Mrs. Frederick B. Bryant
Mr. and Mrs. Joseph H. Blatchford	Mr. and Mrs. J. M. Buck
Col. and Mrs. William M. Blatt	Mr. and Mrs. William A. Buell
Mr. and Mrs. Allen A. H. Blessman	Mr. and Mrs. C. W. Buhler
Mr. Harry Blethroad	Edward P. Bullock
James B. Blinkoff	Alfred F. Buonaguro
Frank Bliss, Jr.	Hon. William A. M. Burden
Mr. and Mrs. Huntington Block	Mr. and Mrs. Townsend Burden III
Mr. Howard C. Blossom	Mr. James M. Burger
Mr. and Mrs. Gordon H. Blume	Mrs. Julia T. Burlen
William W. Blunt, Jr.	Mrs. Poe Burling
Mrs. Julian S. Boardman	Mr. and Mrs. Harry W. Burns
Mr. and Mrs. D. L. Bodenhamer	Richard Scott Burow
Robert F. Bodroghy	Joseph Burton
Ms. Marie-Therese Boever	Mr. and Mrs. Thompson H. Butz
Mr. and Mrs. J. B. Bogan	Rex R. Byerly
Mr. B. P. Bole, Jr.	Mr. E. T. Byram
Mr. and Mrs. Mel H. Bolster	Lorena Smith Cabbaniss
Victor L. and Barbara J. Bonat	G. W. Cage, M.D.
Mr. and Mrs. James C. H. Bonbright	Mr. and Mrs. Edwin Callahan
Joan V. Bonk	Mr. G. W. Callender
Mr. and Mrs. Philip Bonsal	Mr. and Mrs. Jerry Campbell
Mr. Richard E. Bonsib	William D. Campbell
E. Bordenet, Jr.	Mr. Frank A. Campini
Mr. and Mrs. F. Borowsky	Capt. and Mrs. Rodion Cantacuzone
Ms. Barbara C. Bottarini	Philip L. Cantelon
C. Joseph Bowdring	Francis Caponegro, Jr., M.D.
Steven R. and Diana T. Bowen	William I. Cargo
Mr. and Mrs. Paul A. Bowles	Mr. and Mrs. Ray Carlisle
Emily M. and Sidney Boxer	Mr. and Mrs. Woolsey Carmalt
John and Patricia Boyd and Family	Rear Adm. and Mrs. Ralph H.
Mr. and Mrs. D. Wade Boyer	Carnahan
Eugenie R. Bradford	Mr. and Mrs. Hamilton Carothers
Mr. and Mrs. Calvin Brantley	Mr. and Mrs. Kenneth S. Carpenter
Mr. and Mrs. Thomas F. Brassier	Richard W. Carr
Mr. Harold H. Bredell	Oliver T. Carr, Jr.



*DONOR MEMBERS (\$100 and above)—continued*

Philip L. Carret	Mr. Charles W. Consolvo
Mr. and Mrs. Samuel O. Carson, Jr.	Mr. William R. Conte
Col. Douglas H. Carter	Mr. Edward C. Cook
Thomas K. Carter	Mrs. Philip S. Cook
Mr. Victor Cascella	Mr. and Mrs. Robert S. Cook
Mrs. Robert A. Cashell	Arthur Copertino
Mr. and Mrs. H. C. Cashen II	Mr. and Mrs. Jos. C. Cornwall
Mr. and Mrs. Walter Cate	Elizabeth R. Corson
Kevin John and Maria Luisa Catt	Ralph J. and Debbie Coselli
Joseph and Margaret Chachkin	Mr. John Edward Cottongim
Dr. David Challinor	Mrs. Olivia W. Coulter
Mr. Christopher Chapin	Bentley Courtney, Col. AUS (Ret.)
Rose May and Allyn D. Chapman	Mr. and Mrs. Howard V. Covell
Dr. and Mrs. Joseph V. Charyk	L. Gray Cowan
Joel Chaseman	Mrs. Logan O. Cowgill
Mr. and Mrs. Guiseppe Checchi	Mrs. W. C. Cox
Alvin K. H. and Irene Chee	Mr. and Mrs. David M. Crabtree
Mr. and Mrs. Boris E. Cherney	Mr. James R. Cramblett
Mr. and Mrs. Timothy W. Childs	Fritz J. Cramer, M.D.
Dr. Young Soo Choi	Mr. and Mrs. Thomas W. Crews
Mr. Harold C. Choitz	Mrs. Thomas E. Crocker
Priscilla M. Christy	Mrs. Richard S. Cross
Dr. Thomas M. Chused	Mrs. Alice Cueva
Mr. and Mrs. Ramon L. Cilimberg	Dr. and Mrs. W. T. Cunningham
John C. Cini	Mrs. Catherine G. Curran
Mrs. Edith B. and C. R. Clark	Ms. Ida D. Cuthbertson
Mr. H. Lawrence Clark	Natalie M. Cutler
Patricia D. W. Clark	Mr. J. Robert Cutter
Roland E. Clark	William I. Daniels
Le Mon Clark, M.D.	Lt. Comdr. David L. Daniels, USN
Mr. Arthur D. Clarke	Helen Darling
Mrs. Jean G. Clarke	Mr. Guenter Daub
Sumner N. Clarren	Barry C. Davis
Ms. Dorothy I. Cleland	Mr. and Mrs. F. Elwood Davis
Mrs. Thomas K. Cline	Olivia Davis
Ane Clint	Evelyn Y. Davis
Capt. and Mrs. Richard Cobb	Mr. and Mrs. Bruce L. Davis, Jr.
Dr. and Mrs. David G. Cogan	Mrs. Alva A. Dawson
Ms. Nancy Coggins	Mr. and Mrs. D. C. Dawson
Mr. and Mrs. Bernard Cohen	E. A. Dawson
Bertram M. Cohen	Mr. Anthony J. De Marco, Jr.
Col. Russell C. Coile	Silvester De Tomasis
Miss Barbara Colbron	Mr. Alan L. Dean
Mr. Arthur J. Collingsworth	Dalene B. and Joseph E. Dean
Mrs. James M. Collins	Mr. Daniel A. Deatrich
Margaret S. Collins	Ralph H. Deckelbaum
Virginia M. Collins	Mr. and Mrs. Charles Decou
T. Clyde Collins, Jr.	Mr. and Mrs. Wayne Richard
A. R. Colon	Delaney
Mr. and Mrs. John Colvin	Capt. and Mrs. Victor Delano
Josephine A. Conley	Mr. and Mrs. Howard Dellon
Mrs. Ethel Conlisk	Dr. and Mrs. Lewis Hilliard Dennis
Dr. Richard Lee Conn	Ms. Linda Desmarais
Dr. George W. Conner	Mrs. Gladys B. Devlin
Michael M. Conrad, Col. USAF, (Ret.)	

*DONOR MEMBERS (\$100 and above)—continued*

Charles F. Dewald	J. S. Farrington
Mr. and Mrs. Matthew S. Dick, Jr.	Richard Fay
Phil Dickey	Col. and Mrs. J. J. Felmley
James L. Dietz	Miss Patricia Fenton
Dr. Henry Dillon	Mr. and Mrs. D. R. Fesler
Mr. Nicholas Dinos	Roy Feuchter
Mr. and Mrs. Allen T. Dittmann	Mr. Marshall Field
Patricia Dix, M.D.	Robert C. and Karen J. Fink
Walter W. Doescher	James P. Finn
Austin F. Dohrman, Jr.	Mr. and Mrs. Kimball C. Firestone
George Arntzen Doole	Henry Fischbach
James A. Dorsch	Miss Eleanor P. Fischer
Maryanna Dotson, M.D.	Mr. and Mrs. Henry G. Fischer
Mr. and Mrs. T. M. Douglas	Mr. and Mrs. S. Greenhoot Fischer
Doris R. Drake	John A. Fischer, M.D.
Mrs. Frances E. Draper	Mr. and Mrs. Leonard L. Fischman
Robert Andre Dumas, Sr.	Ronald and Barbara Fitzgerald
Lucia J. Dunham	Mr. Thomas R. Flagg
Helen Jean Arthur Dunn	J. Fleischman
Mr. and Mrs. H. Stewart Dunn, Jr.	Mr. and Mrs. Philip V. Fleming
Vernon J. Dwyer	Robert W. Fleming
Mr. and Mrs. Henry L. Dye	Dennis M. Flemons
Dr. Elizabeth M. Earley	Mr. and Mrs. M. K. Fleschner
Mr. and Mrs. John M. Eger	David Fogelson
Lawrence A. Ehrhart	Mr. and Mrs. Lee M. Folger
Mrs. Robert Ehrke	Mr. and Mrs. Oliver Harold Folk
Mr. and Mrs. Robert B. Eichholz	John A. Ford, Jr.
Comdr. and Mrs. Harvey Eikel	Mr. and Mrs. Jay Foreman
Albert N. Eisenberg	Miss Helen E. Forshier
Dr. and Mrs. Gilbert M. Eisner	Mr. James H. Forsyth
C. Burke Elbrick	Jon David Francis
Dr. and Mrs. Fred A. Elder	Mr. and Mrs. Lucius L. Free
Mrs. Leila Eley	Robert Freeburg
Mr. F. H. Ellenberger	Randolph and Mafalda French
Mr. and Mrs. A. S. (Tex) Elliott	Mr. and Mrs. Arthur H. Fribourg
Mrs. Gladys Burian Else	Arthur D. and Barbara B. Friedman
Mr. George M. Elsey	Mrs. Barbara Friz
Mr. C. McDonald England	Mr. Douglas Wayne Fuller
Mr. and Mrs. Richard England	Mr. and Mrs. K. Georg Gabriel
Mr. and Mrs. Pleasanton H. Ennis	Mr. and Mrs. Edward J. Gaffney
Mr. and Mrs. Stephen B. Epifano	Mr. Richard O. Gale
Barry H. Epstein, M.D.	Mrs. Charles E. Gamper
Ann E. Erdman	Mr. and Mrs. John B. Gantt
Mr. and Mrs. Alfred C. Escherich	Edwin F. Garbe
Mr. Robert Esposito	Mr. and Mrs. Lion Gardiner
Mr. and Mrs. John G. Esswein	Mr. and Mrs. Arthur W. Gardner
Mrs. Ruthild Panten Eustis	Mr. and Mrs. Paul Gardner
Mr. and Mrs. James G. Evans, Jr.	C. Donald Garrett
Mr. Burton N. Everett	Mrs. Virginia B. Garvey
Everett J. Long	Mr. T. Jack Gary, Jr.
Mrs. Herbert P. Fales	Larry Gaynes
Mr. Charles L. Farbstein	Ms. Celia Gazdar
Ms. Marilyn Farrand	Mr. and Mrs. Daniel Geller
James P. Farrell	Samuel Geller
Patricia C. Farrell	Nancy L. George

*DONOR MEMBERS (\$100 and above)—continued*

Mr. Arthur F. Gerding	Samuel L. Hack
Frances Giacobbe	Mr. and Mrs. Edwin M. Hackenberg
William H. Gibbons	Richard B. Hacker
Mr. David H. Gift	Theodore J. Hadraba, Jr.
Miss Alice L. Giles	Louis P. Haffer
Douglas J. and Carol Giles	Mr. and Mrs. Richard H. Hagemeyer
Wallace E. Giles	Elizabeth P. Hagen
Robert Henry Gills	Mr. and Mrs. Gilbert Hahn, Jr.
Mrs. E. W. Glascock	Mr. and Mrs. Ernest V. Hallberg, Jr.
Dr. Sanford A. Glazer	Mrs. Joellen Hallmark
Mr. and Mrs. T. K. Glennan	Mr. and Mrs. Samuel Halpern
Mr. and Mrs. Wm. Goad	Ms. Elizabeth C. Ham
Mrs. John H. Godfrey	Dr. and Mrs. Allen Hamburg
Miss Nancy A. Goff	Mr. and Mrs. Jerome S. Hamerman
Mr. and Mrs. Henry H. Goldberg	Mr. and Mrs. Elwood C. Hamsher
Dr. and Mrs. Herbert A. Goldberg	Virginia W. Hanks
Mr. B. J. Goldfarb	Mr. and Mrs. Terrance Hanold
Mrs. Eliane A. Goldman	Mr. Stafford Hansell
Susan S. and Richard W. Goldman	Mr. and Mrs. R. E. Hansen
Herbert A. Goldsmith, Jr.	Dorcas Hardin
Col. and Mrs. Julius Goldstein	Mr. and Mrs. William L. Harding
Dr. Everett J. Gordon	Hardy Hargreaves
Mrs. Lois R. Gordon	Mr. Gilbert R. Harlan
Richard E. Gorozdos	Ms. Helen Leale Harper, Jr.
Mr. and Mrs. Fred Gould	Robert C. Harris
Mr. Mitchell Gould	Mr. and Mrs. Robert H. Harris
Mr. and Mrs. William Gouldsbury	William J. Harris, Jr.
Mrs. Katharine Graham	Mr. and Mrs. Byron E. Harrison
Capt. and Mrs. C. A. Grandjean	George A. Hatzes, Jr.
Raymond E. Grant	Mr. and Mrs. David S. Hawkins
Mr. Harold D. Grant, Jr.	Patrick Hayes
Mrs. Herbert C. Gravely, Jr.	Thomas Hays
Dr. Sheila H. Gray	Mr. Frank R. Heath
Mr. Thomas A. Green	Mr. and Mrs. George L. Hebben
Hix H. Green, Jr.	Mr. and Mrs. Richard Hedlund
David J. Greenburg	Mr. Frederick H. Heierding
Marc Greenwald, M.D.	Judith B. Heimann
Mr. and Mrs. T. Vernon Greer	Col. and Mrs. Robert D. Heintz, Jr.
Mr. and Mrs. Joseph B. Gregg	Mr. and Mrs. Martin D. Held
Miss Gretchen Grieb	Alverne S. Hellenthal
Mr. Richard B. Griffin, Jr.	Mr. and Mrs. Jack Heller
Robert Groberg	Mr. and Mrs. C. T. Hellmuth
Drs. Christian and Carol Gronbeck	Ralph D. Helwig
Dr. and Mrs. C. D. Groover	Jeffrey L. Hendry
Mr. and Mrs. Patrick W. Gross	Mr. and Mrs. W. E. Henry, Jr.
Dr. Robert E. Gross	Geri L. and Jack W. Henry, Jr.
Mrs. Helen K. Groves	Mr. and Mrs. Alan H. Herman, Jr.
Henrietta R. Gula	Ms. Jane E. Herrmann
Helena Gunnarsson	Mr. and Mrs. Stuart E. Hersh
Mr. and Mrs. Alvin Guttag	Earl C. Hertenstein
H. Robert and Suzanne Guy	Mr. and Mrs. George J. Hess
Miss Barbara Guzy	Dr. and Mrs. R. R. Hessberg
Mr. and Mrs. Frederick J. Haas	Mr. Richard F. Hewett
Lonn C. Haas	Ms. Frankie Hewitt
Mrs. Walter A. Haas	Robert A. Hicks



*DONOR MEMBERS (\$100 and above)—continued*

Mr. Alan R. Hill  
Douglas S. Hill  
Mr. and Mrs. Jonathan B. Hill  
Mr. Louis Hilton  
Mr. and Mrs. Richard H. Hinchcliff  
Mr. and Mrs. William J. Hines  
Mr. Mas E. Hironaka  
Stanley R. Hirsch  
Mrs. W. Gifford Hoag  
Mr. and Mrs. Maurice A. Hoard  
E. Roberts Hofsas  
Mr. and Mrs. John B. Holden  
Mr. and Mrs. Henry C. Holle  
Mr. and Mrs. George B. Holmes  
Jesse H. Holmes  
Samuel C. O. and Jane E. M. Holt  
Mr. and Mrs. Gary L. Hong  
Mr. and Mrs. Clarence G. Hoop  
Mr. and Mrs. Townsend Hoopes  
Anthony and Judith Hope  
Mr. and Mrs. Earl Hopper  
William E. Horn  
Mr. John K. Hoskinson  
Mr. Arthur A. Houghton, Jr.  
Mr. and Mrs. Lawrence R. Houston  
Frederic K. Howard  
Mrs. A. C. Howell  
Mr. Thomas C. Howell  
Ms. Judith A. Howlett  
Dr. and Mrs. John Hoyle  
Dr. Sam W. Huddleston  
Mr. and Mrs. George N. Hudson  
Mrs. Hugo G. Huettig, Jr.  
Mr. and Mrs. James H. Hughes  
Mrs. E. H. Hulsey  
Mr. and Mrs. Walter J. Hunt  
William R. Hunter  
Claude D. Hurd  
John D. Hurley  
Mr. and Mrs. F. Irving Hutchins  
Ms. Marjorie P. Hutchinson  
Mr. and Mrs. John F. Hyland  
Mrs. Vera C. Hyman  
Mr. and Mrs. William K. Ince  
Dr. and Mrs. N. S. Irely  
Dr. and Mrs. Jeffrey J. Irving  
Mrs. Mary Ellen Irwin  
Michael R. Irwin  
Mr. and Mrs. Lewis M. Isaacs, Jr.  
Ms. Sheila Isham  
Edward Z. Israel  
Terrence Jach  
Dr. and Mrs. Michael A. Jackson  
Mr. and Mrs. Hugh Jacobsen  
Mr. and Mrs. Lawrence Jacobsen

Ms. Sharon Jacques  
Mr. Steven R. Jaffe  
Dr. Glenn James  
Mr. and Mrs. Robert T. Jaske  
Mr. and Mrs. Donald W. Jeffries  
J. Rukin Jelks, Jr.  
David B. Jenkins  
Mrs. Dorothy Jennett  
Mrs. Gerald J. Jewell  
Lt. Col. Madeline P. Jims  
Mrs. E. W. Johnson  
Miss Eleanor H. Johnson  
Mary E. Johnson  
Col. and Mrs. F. W. Johnson, Jr.  
John R. Johnson, Jr.  
Miss Charlotte Jones  
Mr. James E. Jones  
Mr. and Mrs. Rollan L. Jones  
William H. Jones, Jr.  
Miss Elizabeth Jorzick  
Mr. and Mrs. Michael Joseph  
A. J. Julicher Associates  
Mr. and Mrs. Albert H. Jung  
John M. Kalbermatten  
Linda H. Kamm  
Mr. Peter Kammeyer  
Dr. and Mrs. John J. Kane  
Mr. Burke Kaplan  
Mr. and Mrs. Peter E. Kaplan  
Stuart E. and Evelyn Karu  
Mrs. Charles L. Kaufmann  
Mr. Peter S. Kaufmann  
Mr. and Mrs. Edward W. Kay  
Mr. John L. Keatts  
Mr. and Mrs. Earl W. Keegan  
Mr. Thomas C. Keegan  
Mr. and Mrs. Harold Keegstra  
Mr. Ronald G. Keeping  
J. R. Keiper, Jr.  
Mr. Robert E. Keiter  
Mr. and Mrs. G. J. Kelly  
Harris L. Kempner  
Louisa L. Kennedy  
Andrew A. Kerhulas, Jr.  
Mr. and Mrs. Arthur H. Keyes, Jr.  
Thomas C. Kibirsky  
John Kicak  
Marjorie J. Kidd  
Linda H. Kight  
Mr. and Mrs. A. J. Kilcarr  
Miss Sharyn Kilderry  
Ms. A. Lorraine Killion  
Mr. Charles T. Kindsvatter  
Mr. George H. Kinkel  
Mr. and Mrs. Philip C. Kirby

*DONOR MEMBERS (\$100 and above)—continued*

Mr. and Mrs. Joseph M. Kirchheimer	James A. Lee
Lawrence Kirstein	Marion S. Leech
Mrs. Helen Klages	Dr. and Mrs. Lasalle D. LeFall, Jr.
Mr. and Mrs. Arthur Klein	Mr. George Lehnen III
Hon. and Mrs. Herbert W. Klotz	Jacob and Charlotte Lehrman
Mrs. Virginia H. Knauer	Foundation, Inc.
Mr. and Mrs. J. K. Knee	Dr. and Mrs. R. Leidelmeyer
Mr. and Mrs. Arthur S. Knox	Mr. William Leier
Jean R. Knutsen	Ms. Lavinia Lemon
Mrs. Edgar Kobak	Seymour B. Lenz
Mr. Steven P. Koch	Mr. and Mrs. John F. Lenzzini
Dr. and Mrs. Rolf A. Koehler	Mr. and Mrs. H. I. Leon
Robert W. Koopman	Mrs. Ethelynne H. Leonard
Anne Kopmeier	Mr. and Mrs. Robert Leonard
David E. Koranek	Hon. William Leonhart
Mr. Jack Korber	Monica Lesko
Dr. and Mrs. M. C. Korengold	Helen S. Lessin
Mr. and Mrs. Fritz-Allen Korth	Mr. and Mrs. Edward H. Levi
Laurence E. Korwin	Mr. and Mrs. Wm. Levi
Larry, Barb, and Kara Koziarz	Mr. and Mrs. Arthur Levine
Albert Kramer	Mr. and Mrs. Ernest E. Lewis
Mr. and Mrs. R. L. Kranker	H. D. Lewis
Mr. Barton Krawetz	Dr. Stephen Li
Mrs. David L. Kreeger	Dr. and Mrs. Joseph Lichtenberg
Edward L. Krejny	Mr. and Mrs. Alfred B. Lichtenstein
Mr. Herbert C. Krieger	Mr. and Mrs. Robert G. Liebhardt
Ms. Janet Anastacia Krombar	Elliot R. Lief
Werner J. Kronstein	Richard M. Lindenauer
Mr. and Mrs. Joseph R. Krystof	Frank W. Lindenberger
Mr. Frank A. Kugeler	Mr. R. Robert Linowes
Mr. Stanley J. Kuliczowski	Mrs. Eunice K. Lipkowitz
Miss Suzanne Kuser	Mr. and Mrs. Stacy B. Lloyd III
Mr. Richard J. Kuzman	Kathleen E. Lloyd, M.D.
Mr. and Mrs. Walter L. Day, Jr.	Mr. and Mrs. Millington Lockwood
Judge and Mrs. Marion C. Ladwig	John Lodge
Mr. Albert J. Laflam	Mr. and Mrs. William W. Loftin
Mrs. Sidney K. Lafoon	Mr. and Mrs. R. Logan
Mr. Robert W. Lagler	Diana J. Logsdon
Mr. Joseph S. Lamb	Mr. and Mrs. James P. Londergan, Jr.
Mr. and Mrs. Samuel J. Lanahan	Mr. and Mrs. Robert A. Long
Mr. and Mrs. A. Scheffer Lang	Ernie Loomis
Mr. and Mrs. Chiswell D. Langhorne,	Mr. Jeffrey A. Loos
Jr.	Robert K. Lootens
Mr. and Mrs. Anthony A. Lapham	Mrs. Ricard K. Loudon
Mr. and Mrs. Felix J. Lapinski	P. H. Loughlin III
Mr. and Mrs. Vernon W. Larsen	Roger H. V. and Claudine G. Lourie
Dr. and Mrs. K. C. Latven	Mr. and Mrs. Robert R. Lovegren
Mr. Robert F. Law	Charles L. Lowery
Walter E. Lawrinson, M.D.	John R. Lowry
Mr. Sperry Lea	Harry Lunn
Wilfred M. Leatherwood, Jr.	Edward and Donna Lynch
Mr. and Mrs. Lawrence F. Ledebur	Margaret R. Lynch
Mr. and Mrs. Herman M. Ledonne	Mr. and Mrs. John A. L. Lyons
Charles W. Lee	Janet C. McCaa
Mrs. Florence J. Lee	Ms. Jane H. McCafferty

*DONOR MEMBERS (\$100 and above)—continued*

Mr. and Mrs. George W. McCagg, Jr.	William C. Martin, Jr.
June L. McCalla	Miss Priscilla Mason
Violet McCandlish	Mr. and Mrs. Christopher F. Masters
R. McCann, M.D.	Dr. and Mrs. Glenn B. Mather
E. V. McCauley	Mrs. Elbert G. Mathews
Mrs. Sarah H. McClain	Mrs. G. L. Mathews
Mr. Matthew B. McCullough	Mr. W. E. Matthews, Jr.
Mrs. Betsy P. McDargh	Mrs. Ellen P. Maurice
Alan Miles MacDougall	Mr. and Mrs. Robert F. Maxwell
Mr. and Mrs. William B. Macdonald	Dr. William B. May
Dan and Marge Maceda	Dr. and Mrs. Francis Mayle, Jr.
James P. McGranery, Jr.	Hannah and Michael E. Mazer
Hugh F. McGrath	Mr. Sidney Meeks
Dr. and Mrs. John J. McGrath	Miss Ruth L. A. Meixner
Mr. and Mrs. Clark MacGregor	Kenneth E. Melson
John S. McInnes	Mr. and Mrs. E. Mercy, Jr.
Malcom A. MacIntire	William R. Merriam
Marian S. MacIntyre	Comdr. and Mrs. Hugh Anthony
Anthony J. Maciorowski	Merrill
Mr. and Mrs. Douglas W. McKay	Mr. Ted S. Merrill
Col. James E. Macklin	Mrs. Kathryn Mervenne
Mr. and Mrs. J. T. McLane	Mr. and Mrs. Henry L. Meyer
Dr. and Mrs. Earl N. McLeod	R. J. Mikyska
Helen F. Macmillan	Mr. and Mrs. Gordon K. Milestone
W. C. McNeal	Grace Milgram
Mr. R. A. McReynolds	Mr. and Mrs. Donald E. Miller
Mr. Bernard S. Macsherry	Mr. and Ms. Harold A. Miller
Daniel J. McTeague	Mr. and Mrs. Herbert E. Miller
Mr. and Mrs. A. Martin Macy	L. Allen and Cindy R. Miller
Mrs. J. Noel Macy	Linda B. and Marc E. Miller
Mrs. Louise Mann Madden	Mason E. Miller
Rex A. Maddox	R. Eric Miller
Alfred C. Maevis	Mr. and Mrs. Walter C. Miller
Mr. and Mrs. Edward P. Maffitt	Mr. and Mrs. Daniel M. Millet
Mrs. Joan B. Maguire	Robert J. Millstone
Mr. Girard T. Malanka	Mr. and Mrs. Robert N. Minutillo
Mr. and Mrs. Robert Maldegen	Mr. and Mrs. Glenn J. Mischel
Thomas P. Maloney	Mr. Timothy Mitchell
Beverly Mandil	Robert M. Moliter
E. S. and Jean C. Mangiaficc	Col. (USAF, Ret.) and Mrs. Kenneth
Robert P. Mann	L. Moll
Mr. and Mrs. Paul Mannes	J. Montgomery
Mr. E. Manuel Manning	Ms. Wendy L. Montgomery
Mrs. Charles F. Manov	Mr. and Mrs. Arthur Cotton Moore
Mrs. John C. Mansfield	Mrs. E. P. Moore
Mr. Edward Marks	Mr. and Mrs. Gerald Moore
Mrs. R. A. Mermet	Mr. and Mrs. J. Edward Moore
F. E. Mars, Jr.	Richard H. Moore
Mr. and Mrs. Andrew W. Marshall	Ann K. and Cecilio J. Morales
Anita and Franz R. Marshall	Mrs. Theda A. Moreno
Barton A. and Barbara H. Marshall	Margaret Morgan
R. N. Marshall	Mrs. Marion K. Morgan
Mrs. Elizabeth Martin	William A. Morgan
Mr. and Mrs. Guy Martin	Firth Morris
Mr. M. S. Martin	Mr. and Mrs. Stephen V. C. Morris



*DONOR MEMBERS (\$100 and above)—continued*

Mr. John Burton Mott	Ms. Bethea Owen
Mr. Terrance J. Mueller	Mrs. Dudley Owen
Mr. and Mrs. Dapray Muir	Mrs. Henry S. Owens
Mrs. Stanley N. Muirhead	Mr. Thomas L. Owens
Mr. and Mrs. Carl J. Mulert, Jr.	J. C. Pace
William Mullinix, Jr.	Joan Bingham Packard
Mr. and Mrs. James H. Muncy	Arnold E. Palmer
G. R. Munger	David S. and Sarah C. Palmer
Burnaby Munson	Comdr. Everett A. Parke, USN
John F. Murphy	Alice Mengel Parker
Frank J. Murphy, M.D.	Mrs. Thornton J. Parker, Jr.
Mr. Edmund L. Murray	Mr. and Mrs. Robert L. Parnell, Jr.
Miss Lucile Myers	Mr. and Mrs. David T. Parry
Richard Needelman	Mr. and Mrs. Ray Patrick
Arthur H. Nelson	Kenneth W. Patrum
Mr. and Mrs. Bruce H. Nelson	Dr. Daniel Y. Patterson
Mr. and Mrs. Bruce C. Netschert	Ms. Shirley Carter Patterson
Mrs. Robert E. Newby	Miss Ruth Upperco Paul
Richard A. Newlin	Dr. Fred Payne
William and Louisa Newlin	Mr. and Mrs. Harry A. Paynter
Dr. and Mrs. Dwight W. Newman	Raymond Pearlstine
Gary Ray Newport	Mr. and Mrs. Jack Walter Peltason
Thomas S. Nichols	Edmund Pendleton
Mr. Robert F. Nicholson	Hon. and Mrs. Charles Percy
Henry and Carol Nickel	Mr. Francis I. Perier
Thomas P. Nigra, M.D.	Samuel T. Perkins
Mr. and Mrs. Richard A. Niles	Mrs. Joan I. Perna
Carl F. Norden	Jacqueline Perry
Glenn and Judith Nordin	James P. Perry
Mr. Gerson Nordlinger, Jr.	Ralph A. Pesiri, M.D.
Howard and Rose Norseth	Mr. George A. Peterson
Mr. and Mrs. Jack R. Norwood	Ms. Samantha A. Peterson
Mr. and Mrs. Michael P. Novelli	J. C. Petricciani, M.D.
M. Nussbaum	W. Philip, M.D.
Dennis F. O'Brien	Hon. and Mrs. Christopher H. Phillips
Robert O'Brien	Mrs. Alys E. Phreaner
Patricia H. O'Connor	Rae H. Pickrel
Mr. Robert M. O'Connor	Jacqueline Pierce
Mr. William J. O'Connor, Jr.	Mildred H. Pierce
Paul T. and Nancy F. O'Day	Mr. and Mrs. Walter Pincus
Thomas A. and Marie O'Day	Lucy W. Pirtle
Marilyn O'Harrow	Mr. and Mrs. Steuart Pittman
Mrs. John O'Master	Mr. and Mrs. Harry M. Plotkin
Grace and Jerry O'Regan	Welch Pogue
Dr. Carlos E. Odiaga	Mr. and Mrs. L. B. Polsky
Dr. and Mrs. Edward C. Oldfield III	Mr. and Mrs. Reuben Pomerantz
Mr. and Mrs. Lawrence B. Olds	Doris D. Poole
Mr. Nathan H. Olshan	Mr. and Mrs. Dwight J. Porter
Joseph A. Ondrejko	Mrs. Prentice Porter
Robert Orben	Bruce S. Post
Mr. and Mrs. William E. Oriol	John N. Postak
Mr. and Mrs. Forrest E. Orr	Alan W. Postlethwaite
Mr. and Mrs. E. G. Osbourne	Ronald G. Precup
David and Irene Osterman	Mrs. Richard Preece
Gayil Nalls Overholser	Mr. and Mrs. John Prenzel

*DONOR MEMBERS (\$100 and above)—continued*

Dorothy B. Preslar	Gary D. Rosch
Col. and Mrs. William M. Preston	Mr. and Mrs. Ernest T. Rose
Mrs. Charles P. Price	Irving Rose
Norville Reid Price	Mr. Gerald A. Rosen
Mr. Theodore W. Price	Seymour and Elizabeth Rosen
Dr. and Mrs. Jerold Principato	Mr. and Mrs. Harvey Rosenbaum
Mrs. Dow Puckett	Maurice Rosenberg
Inez L. Pulver	Mr. and Mrs. Samuel J. Rosenfeld
Mr. and Mrs. R. E. Purnell	Benjamin J. Rosenthal
Mr. Charles M. Quarre	Mr. R. M. Rosenthal
Mr. Cyrus J. Quinn	Mr. Ray W. Rosevear
Vivian R. Rabineau	Julius Ross
Ms. Carole Rader	Arnold Rothstein
John B. Radner	Frances F. Rowan
Dr. and Mrs. Ernest G. Rafey	Mr. and Mrs. H. J. Rowe
Mr. and Mrs. Mozart G. Ratner	Mr. and Mrs. James H. Rowe, Jr.
Charles F. Rattigan	Randi Rubovits-Seitz, M.D.
William Rausch	Mr. Todd D. Rudd
Isabel M. Rea	Dr. and Mrs. Daniel Ruge
Mr. and Mrs. Michael M. Rea	Peter T. and Nancy F. Russell
Eugene L. Reagan	Dr. and Mrs. Lester A. Russin
Mr. and Mrs. William J. Reckmeyer	Georjean and Alan Rust
Mr. and Mrs. Edwin Rector	Dr. and Mrs. Edward C. Ruth
Mr. and Mrs. H. E. Redmon	Mr. and Mrs. Allan J. Ryan
Captain and Mrs. Dale C. Reed	John M. and Madeline S. Ryan
Henry Reed	Mr. Joseph J. Ryan
Douglas F. Reeves	Mr. and Mrs. Bennett Y. Ryan, Sr.
Robert E. and Barbara H. Reich	Mr. Wayne D. Rydberg
Mr. Norman E. Reid	Ms. Penelope S. Rytter
Quentin L. Reutershaw	Henry Sabatell
Helen L. Reynolds	Dr. and Mrs. Abner Sachs
Mr. Frank C. Reynolds, Jr.	Mr. and Mrs. Kelsey Saint
Barbara Rhodes	Robert Sanabria
Don Rhodes	J. Jeff Sandel
Joseph A. Rice	Capt. and Mrs. Ben T. Sanders
Ronald P. Rich	Dorothy B. Sandleman
B. A. Richmond	Virginia and Robert Santucci
Mrs. Betty E. Ridout	Mr. and Mrs. John T. Sapienza
Eugene W. Rieder	Mr. Milton C. Sappe
Mr. and Mrs. Robert E. Rinehart	Frances L. Saran
Ms. Lorraine D. Rivard	Hon. John C. Satterthwaite
Mr. and Mrs. Thomas B. Robb	Mr. Ronald L. Sawyer
Dr. Howard S. Robbins	Donald R. and Mary C. Saylor
Jack and Constance Robbins	Francis B. Sayre
Ms. Jane F. Roberts	Harrison S. Sayre
Ms. Mary M. Roberts	Mr. Ernst M. Schaefer
Mrs. David Roberts III	Mr. and Mrs. William C. Schaefer
Dr. Max Robinowitz	Mr. and Mrs. John H. Schafer
Mr. James E. Robins	Mr. and Mrs. Tony Schall
Walter P. Robinson, Jr.	Hon. and Mrs. James H. Scheuer
C. O'Neil Rogers	Dr. Basil A. Schiff
Mrs. Claire V. Rogers	Joseph A. Schifrin
Mr. and Mrs. John L. Rogers	Miss Matilda P. Schlicht
Mr. and Mrs. Howard L. Rohr	Col. and Mrs. William P. Schneider
Hon. Fred B. and Mrs. Rooney	Mr. and Mrs. Marvin Schneiderman

*DONOR MEMBERS (\$100 and above)—continued*

Jacques J. Schoch	Hon. and Mrs. David S. Smith
Florene M. Schoenborn	Mr. and Mrs. Dean Smith
Mr. H. J. Schonblom	Mr. and Mrs. John M. Smith
Mr. Bernard Schoninger	Miss Mildred Smith
Mr. Dick Schubert	Dr. and Mrs. Scott M. Smith
Mr. and Mrs. Emanuel Shugar	Shirley A. Smith
Laura D. Schuldt	Mr. and Mrs. Sterling W. Smith
Lloyd E. Schuster	Thomas F. and Patricia M. Smith
Beldon D. and Corine G. Scott	Hon. and Mrs. Henry Smith III
Mr. C. W. Scott	Mr. Benjamin M. Smith, Jr.
J. Scott	Lawrence P. and Helen R. Snipper
James J. Scott	Mr. and Mrs. Harry R. Snyder
T. G. Scuderi	Mr. and Mrs. Robert G. Sobeck
Miss Carolynne Seeman	Ms. Janet Solinger
David A. Seibold	Dr. Peter Som
Jean T. Seidenstein	Mr. Juan Armando Soto
Mr. Howard R. Seifried	James A. Spahn, Jr.
Richard J. Sekerka	T. A. Stanhope
Hortense Self	Gary Staples
Ivan M. Selig	Stuart L. Stauss
Sherman J. Sexton	William R. Stehle
Miss Ronna Sharp	Mr. and Mrs. Charles Steigerwald
George and Alison Sharpe	Dr. Marjorie L. Stein
Dr. Carol Sheridan	Mr. John L. Stelling
Karen Sherman	Mr. and Mrs. Robert B. Stephens
Mr. and Mrs. William W. Sherwin	Mrs. E. C. Sterling
Miss Donna Shor	W. Clinton Sterling III
Therese L. Shor	William C. Sterling, Jr.
Mr. and Mrs. Raymond C.	Mr. Darrell E. Stevens
Shreckengost	Mr. and Mrs. Donald Stewart
Ellen Vera Sigal	Dr. and Mrs. T. Dale Stewart
S. Douglas Sigman	Margaret E. Stierwalt
Mr. Edward Silansky	Warren Stimpert
Mr. and Mrs. Jack Silberman	Ellen Stockdale
Mr. and Mrs. William A. Simcox	Miss Barbara M. Stockton
James B. Simmons	Mr. Donald Stow
Mrs. John Farr Simmons	Mr. and Mrs. Michael Straight
Joe and Robin Sims	Mr. and Mrs. Richard H. Stratton
Mr. and Mrs. John P. Sinclair	Virginia Charlene Stroman
Dr. and Mrs. James D. Singletary	Mr. and Mrs. Eugene Struckhoff
Mr. and Mrs. William Sinkin	Sylvia Strunk
Mr. and Mrs. Robert Sivard and	J. C. Sturgess
Family	Dr. and Mrs. Ray E. Stutzman
Mrs. E. Sullivan Slack	William N. Sumerwell Family
Nelson Slater	Mary H. D. Swift
Sanford Slavin	Mr. and Mrs. Samuel H. Swint, Jr.
Mrs. Charlotta B. Sloan	Donald Swogger
Mrs. Jean Sloan	Mr. Gerald L. Swope
Anne Smalet	James McK. Symington
Mr. and Mrs. Albert H. Small	Ms. Martha Frick Symington
Col. and Mrs. C. Haskell Small	M. D. and R. Tabakin
Mr. and Mrs. Marvin Small	Mr. and Mrs. Leland E. Talbott
Victoria B. Smalley	Mr. and Mrs. Norman H. Tatar
Bailey Smith	Barbara and James D. Tate
Charles S. Smith	Joel M. Taubin, M.D.



*DONOR MEMBERS (\$100 and above)—continued*

Cleonice Tavani	Mr. and Mrs. Ray B. Vaughters
Ms. Evalyn Taylor	Mrs. Mirta Rodriguez Vega
Mrs. May Day Taylor	A. Elizabeth Verder
Gen. and Ms. Robert Taylor III	Ms. Marguerite D. Vickerson
Ms. Linda Teixeira	Maria C. Volpe
C. L. Tercek	H. F. Wachsman, M.D., J.D.
Joseph Terranova, Jr.	Mr. Richard F. Wacht
Joseph M. Tessmer	John R. Wagley
The Treuhaft Foundation	Mr. and Mrs. John P. Wagner
Mr. and Mrs. Andrew Therol	Dr. Joseph Walker
Arthur L. Thiele, M.D.	Mr. Robert M. Walker
Maj. C. A. Thomas	Col. and Mrs. John K. Walker, Jr.
Mr. and Mrs. Harry E. Thomas	Mr. and Mrs. Robert D. Wallick
Mr. Beverly T. Thompson	Barbara R. Walsh
Mrs. Frank L. Thompson	Mr. and Mrs. F. H. Walton, Jr.
Mr. and Mrs. Max E. Thompson	Mrs. Harry Wanger
W. Reid Thompson	Dr. Celia Ward
Mr. and Mrs. Brian Thomson	Mr. and Mrs. Morris A. Ward
Mary Edith Thomson	Mr. and Mrs. Norman E. Ward, Jr.
Dr. John L. Thornton	Dorothy D. Warner
Mrs. Vincent M. Throop	Mr. William W. Warner
Dr. and Mrs. George Tievsky	Daniel C. Warren, M.D.
Phillip and Sylvia Tiger	Robert L. and Carol B. Waters
Richard Timmons	Mr. and Mrs. Ray Watkins
Dr. and Mrs. Edward P. Todd	Mr. Arnold Watson
Mr. and Mrs. Vladimir S. Tolstoy	Mr. James A. Watson, Sr.
Mr. and Mrs. John J. Toner	Mr. and Mrs. James L. Watters
Mrs. Marvelle B. Toney	Col. and Mrs. Louis V. Watwood
John E. Toole	Dr. and Mrs. Richard Waxler
John K. Tope	Hon. James E. Webb
Homer W. Torbert	Mr. and Mrs. John D. Webb, Jr.
Mrs. William C. Tost	Ms. Elizabeth A. Webber
May Totten	Mr. Vernon A. Webster
Ms. Mary Pat Toups	Nathan and Pauline Wechsler
Mr. and Mrs. David G. Townsend	Dr. Morris A. Weinberger
Carol J. and Timothy J. Traub, Sr.	Mr. and Mrs. Eric W. Weinmann
Mr. and Mrs. James C. Treadway	Mr. and Mrs. Mark Weinstein
Mr. and Mrs. Stephen A. Trentman	Mr. and Mrs. Charles Weitzel
James Glen Trott	Mr. and Mrs. Jack W. Wells
Robert L. Tull	Oscar M. and Jacqueline H. Wells
Mrs. James N. Tulloh	Brig. Gen. Sarah P. Wells
James M. Tully	Elizabeth A. Werner
Mr. and Mrs. Henry J. Tumas	Stuart L. Werner
John H. Turner	Mrs. Mary Nan West
Samuel D. Turner	Mr. and Mrs. Gerald H. Westby
Charles A. Turner III	Mr. and Mrs. Larry E. Westphal
Michele Tutoli	Mr. and Mrs. William B. Wharton
Dr. and Mrs. Howard Ulfelder	Annette P. Whatley
Mr. William R. Updegraff	Mrs. Edwin M. Wheeler
Anthony S. Vaivada	George Y. Wheeler
Mr. and Mrs. Richard C. Van Dusen	Mr. Alexander Wheeler, Jr.
Dr. and Mrs. Philip Varner	Mary Anne Whitcomb
Emily W. Vaughn	Ms. Anita R. White
Mr. and Mrs. William V. Vaughn	Margit T. White
Capt. Robert E. Vaughn, USN	Mr. Maurice E. White

*DONOR MEMBERS (\$100 and above)—continued*

Mr. and Mrs. Wendell B. White	Mr. and Mrs. Payson Wolff
James L. Whitehead	Mrs. William Wolfinger
James and Elizabeth Whitsett	Mr. and Mrs. J. Roger Wollenberg
Mrs. Catherine L. Whitsitt	Mr. David L. Wood
Mr. and Mrs. Harry W. Whyte	Imogene R. Wood
Mr. and Mrs. Blaine L. Wicklein	Mrs. Margaret Y. Woodbridge
Mrs. Mary H. Wiebe	Mr. and Mrs. R. L. Woods
Mr. Crocker Wight	Mr. William Worden
Dr. and Mrs. U. V. Wilcox II	Mr. Michael Woscoboinik
Mr. and Mrs. J. Burke Wilkinson	Mr. and Mrs. Herman Wouk
Dr. and Mrs. Robert S. Wilkinson	Mr. and Mrs. C. L. Wright
Mr. and Mrs. Arnold Clarke Williams	Mr. and Mrs. Nelson Wurz
Dr. and Mrs. B. H. Williams	Mr. David E. Wyman, Jr.
Edward D. and Sheryl A. Williams	Frederick B. and Brenda M. Wynn
Mr. and Mrs. Harold M. Williams	Miss Sara J. Yager
Col. Arthur F. Williams, USAF (Ret.)	Mr. and Mrs. Philip D. Yaney
Charles and Helen Williamson	Edward J. and Patricia K. Yates
Mr. and Mrs. John K. Willis	David N. Yerkes
Col. and Mrs. Donald B. Wilson	Mr. and Mrs. Gary B. Yost
Mr. Justin Wilson	Mr. and Mrs. Bernard J. Young
Dr. and Mrs. Ralph Wilson, Jr.	Hal L. and Janice M. Young
Roy Winder	Mr. and Mrs. Abraham Zelony
Catherine C. Winkler	Mrs. John H. Zentay
Mr. and Mrs. David Wise	Samuel E. and Karen R. Zimmerman
Philip B. and Dorothea M. Wisman	Mr. G. H. Zinkgraf
Mr. S. P. Wolfe	Gunter and Frances Zweig

There are, in addition to those Contributing Members listed above, Supporting Members (\$50 and above) too numerous to mention in this publication. Their names are included in the separate publication, *Benefactors of the Smithsonian Institution in Fiscal Year 1980*.

## APPENDIX 8. *Donors to the Smithsonian Institution in Fiscal Year 1980*

The Board of Regents and the Secretary of the Smithsonian Institution join with the entire staff in thanking all of the Institution's friends for their generous financial support and for their gifts to the collections. If perchance the name of any donor has been omitted from the following list, it is an inadvertence and in no way diminishes the Institution's gratitude. Many gifts were received from donors who prefer to remain anonymous; the Smithsonian wishes to thank them for their generosity.

### OFFICE OF THE SECRETARY

#### *SPECIAL PROJECTS*

##### *Donors to the Furnishings Collection*

- Mrs. James Edward Chance III, in memory of Stanley Siedenbach Wohl and Helen Robertson Wohl: oil painting, *Anderson Cottage at Old Soldiers' Home*.  
Mrs. Phillip Geyelin: 1 Rococo Revival sewing table; 1 silver-plated tea tray presented to Senator John Sherman.  
Gross Realty and Construction Company: 2 stone carved finials from Stokesbury house, "Whitemarsh Hall," Philadelphia, Pennsylvania.  
Mr. William H. Hermann and Mrs. Kathryn H. Lord: 1 Rococo Revival sofa.  
Dr. Richard H. Howland: pair of Victorian parlor lamps.  
Mrs. Fern D. Nye: 1 Renaissance Revival hall mirror.  
Mr. Peter G. Powers: 1 roll-top desk, c. 1865; 1 Empire arm chair; pair of Renaissance Revival side chairs; 1 Renaissance Revival parlor table; 1 Astral lamp.  
Mr. C. V. Shafer: 1 Empire pier table.  
Mr. and Mrs. Milton Turner: 1 watercolor, *Duck Pond*, by F. R. Petrie; 1 Steuben glass and silver bowl.  
Miss Dorothy Waggoner: 1 secretary; 1 parlor table; 1 chest; pair of chairs, all c. 1880.  
Mr. Richard L. Williams: set of 4 Rococo Revival side chairs; pair of Rococo Revival side chairs.

### SCIENCE

#### *NATIONAL AIR AND SPACE MUSEUM*

##### *Donor of Financial Support*

National Aeronautics and Space Administration

##### *Donors to the Collections*

- Mr. Ben Abruzzo: clothing and religious medals worn by and log book kept by donor on the first nonstop, transatlantic balloon crossing, August 1978.



Air Force Museum, Wright-Patterson Air Force Base: pressure breathing oxygen mask.  
 Air National Guard, District of Columbia, 121st Tactical Fighter Squadron, Andrews Air Force Base: survival kit for Air Force parachute.  
 Air National Guard, Maryland, 175th Tactical Flight Group, Baltimore: General Electric turbojet engine, c. 1970.  
 Mr. Maxie Anderson: clothing worn by donor of the first nonstop, transatlantic balloon crossing, August 1978.  
 Mrs. Dagmar Arnold-Wohlfors: "Rudy Arnold Photo Collection."  
 Mr. S. N. Bernard: model of W-B2 *Columbia*.  
 Mr. J. P. Bauer: bombsight and disk speed indicator.  
 Mr. Carl Alexius Berndtson: painting, *Pioneer-Venus Eye*.  
 Mr. Robert N. Blair: painting, *Sandringham over Newfoundland*.  
 Bloomingdales: a piece of *Skylab* debris.  
 Mr. Louis J. Borges: rate of climb instrument, Annesley propeller and Japanese Navy airspeed indicator and altimeter, all c. WW II.  
 Mr. Donald B. Bosley: fabric from the airship *Hindenburg*.  
 Mr. John R. Chislett: 5 sextants, 1 skylight compass, and 1 celestial position tracker.  
 Civil Air Patrol, Middle East Region (through Mr. William Reynolds), Andrews Air Force Base: Civil Air Patrol and U.S. Air Force insignia.  
 Civil Air Patrol, New Orleans: 2 pairs of flying trousers.  
 Continental Airlines: Continental Airlines airport sales agent uniform and set of aircrew badges.  
 Cybis: 2 sculptures, *Tranquillity Base*, *Apollo 11 Moon Mission* and *Columbia*, *Apollo 11 Moon Mission*.  
 Delta Airlines: Delta Airlines female flight attendant uniform, 1971, and a set of Delta Airlines aircrew badges.  
 Lt. Gen. James H. Doolittle: Revoredo Trophy, 1979, and 2 paintings, *Mrs. Doolittle* and *General J. H. Doolittle*.  
 Dr. Charles S. Draper: Charles S. Draper memorabilia—National Business Aircraft Association meritorious service award, 1979; International Space Hall of Fame medal; French Academy of Science medal with supporting documentation; Massachusetts Institute of Technology "Bronze Beaver" certificate, 1978; and Inertial-Nav System report written in 1979 by Dr. Draper.  
 Mr. John Elin: U.S. Air Force WW II pilot's navigation kit.  
 ERNO Raumfahrttechnik: model of space lab.  
 Mr. William C. Estler: photograph, *Chesley Bonestell*.  
 City of Fullerton, California: sculpture, *Flight*.  
 Family of A. Norman Gallagher: 1912 Mayback airship engine and the power unit from a Curtiss electric propeller.  
 Mr. Paul E. Garber: Wright Brothers medals.  
 Mrs. Sue M. Gerard: pacemaker.  
 Dr. Paul Gillette: untitled painting by Clyde Prettyman.  
 Goodyear Corporation: models of inflatable space station and three-stage reusable spacecraft.  
 Mrs. Charles F. Grafflin: Salmson AD9 aeroengine.  
 Mr. Fred Griffith: U.S. Air Force flying helmet.  
 Grumman Aerospace Corporation: U.S. Navy pressure-breathing oxygen mask.  
 Mr. Joel K. Harris: flying suit worn by Charles Yeager.  
 Mr. Joseph H. Hirshhorn: sculpture, *Study for the "Monument to Wilbur Wright and the Precursors of Aviation."*  
 Mr. Kenneth Hold: 1941 quick attachable seat pack parachute.  
 Mrs. John J. Ide: print, *Six Balloons*.  
 International Communications Agency: ITOS weather satellite.

Mr. George Kay: radiacmeter and spotlight.  
 Mr. Imre Kutassy: sculpture, *Man on the Moon*.  
 Mr. John Langford: flying scale-models of a Javelin and a Nike Tomahawk.  
 Mr. Abraham Leiss: 3 commemorative coins of the Scout missile liftoff.  
 Charles C. Lewis Company: 2 JN-4D spoke wheels.  
 Mr. Larry D. Lewis: Curtiss engine, propeller, and 3 wheels, all c. 1910.  
 Mr. David McKee: poster, *Aeroplanes Bleriot*.  
 Mr. Joseph McLaughlin: German WW II flak fragments.  
 Mr. Robert A. McLellan: Secor satellite.  
 Manta Products, Incorporated: Manta Pterodactyl Fledgling, Micro Lite aircraft.  
 Mr. J. A. Masek: Waco UIC aircraft.  
 Mr. Robert C. Mikesch: 2 practice bombs.  
 Mr. Charles W. Millard III: fragment of the *Graf Zeppelin*.  
 Mrs. Anita F. (Floyd) Mitchell: U.S. Army WAC WW II service shoes.  
 National Aeronautics and Space Administration, Johnson Space Flight Center: Skylab orbital workshop equipment; Apollo boilerplate; Skylab space food canisters; Apollo flight clothing and biomedical equipment; Gemini helmet, space suits, nonflight equipment, survival equipment, personal flight equipment, and accessories; and Apollo reaction control engine; Kennedy Space Flight Center: models of Triamese concept, Apollo CSM, and Space Shuttle Orbiter, Pegasus "B" Satellite mockup; Langley Space Center: wind tunnel models; satellites; and nose cones; Marshall Space Flight Center: Skylab debris; and rockets and launch vehicle parts and apparatus.  
 National Aerospace Museum (Aviodome): T-J ramjet engine.  
 National Airlines, Incorporated: National Airlines 1980 captain and female flight attendant uniforms.  
 Naval Air Facility, Andrews Air Force Base: anti-G U.S. Navy coverall and U.S. Air Force oxygen masks.  
 Naval Air Systems Command, Norfolk, Va.: aircraft parts and electronics.  
 Naval Development Center, Warminster, Penn.: U.S. Navy flying helmets.  
 Naval Explosive Ordnance Disposal School, Indian Head, Md.: U.S. WW II aircraft bombs and Japanese WW II bomb-firing device.  
 Naval Support Activity, San Francisco, Calif.: 8 20mm cannons.  
 Mr. Larry Newman: clothing worn by donor on first nonstop, transatlantic balloon crossing, August 1978.  
 New York State Atomic Energy Commission: Hermes A-1 Rocket.  
 Mr. Andreas Nottebohm: painting, *Gold Cloud Galaxy*.  
 Mr. William Oliver (through Western Airlines): Western Airlines maintenance foreman uniform and aircrew badges.  
 Family of Charles Olmsted: Olmsted propeller for Navy-Curtiss Flying Boat, 1919.  
 Mr. Arthur Pettingill: aircraft engine model.  
 Mr. Stephen Pitcairn: Pitcairn PCA2 Autogiro model.  
 Mr. Frederick H. Prime: control wheel from Short Brothers Flying Boat, WW I.  
 Mr. Raymond Quinn: Hispano-Suize engine and propeller.  
 Dr. and Mrs. Harry Reger and their children: painting, *Bernst Balcher*.  
 Mr. Ken Ross: 1914 aerial bomb.  
 Mr. Gustav Scherrer: painting, *General Dornberger*.  
 Mr. Aldo Sessa: painting, *Humorum*.  
 Ms. Katherine N. Stanley: Stanley Nomad sailplane.  
 Mr. Timothy Stephens: U.S. Army officer's summer coat and identification tags, WW I.  
 Mrs. August Stiegler: flying helmet worn by Glenn L. Martin.  
 Mr. J. B. Terrell: 2 spoke wheels of JN-4 aircraft.  
 Mr. S. Thornton: Skylab debris.



Tippetts-Abbot-McCarthy-Stratton, Engineers and Architects: Dallas/Fort Worth Airport planning model.  
 Transatlantic Venture Company: "Double Eagle II" balloon envelope.  
 Trigon: 6 Lewis machine-gun magazine drums.  
 Mr. Juan Trippe: medals, aviator certificate, aviation models, paintings, commemorative objects, and U.S. Navy uniforms and accessories.  
 U.S. Air Force, 6515th Test Support Squadron, Edwards Air Force Base: collection of WW I bombs.  
 U.S. Department of Defense, Defense Logistics Agency: military escape and evasion kits (barter kits) for Atlantic and Southeast Asia.  
 U.S. Department of Treasury, Bureau of Alcohol, Tobacco and Firearms: Japanese machine gun.  
 U.S. Navy, Davis-Monthan Air Force Base: Lockheed P-2H Neptune aircrafts.  
 Mr. Thomas B. Walsh: model of Bell 47G helicopter.  
 Lt. Comdr. Joseph E. Wood: key to airship *Los Angeles* radio room.  
 Mr. Ralph C. Woolley: instruments and light from WW I aircraft.  
 Mr. Robert A. Yarber: 3 sculptures, *Instruments for a New Navigation*.  
 Mr. John E. Yeager: airplane receiver, U.S., c. 1917.  
 Mr. Warren E. Youngclaus: Irvin back and chest type parachutes, 1930.

*Donors to the National Air and Space Museum Library*

American Astronautical Society: official records.  
 Mrs. Joseph Howard Barnard: photograph of William "Billy" Mitchell, autographed.  
 Robert F. Brown: material on the Republic XF-91.  
 Mrs. H. Lester Cooke: newspaper clippings on the space missions and other materials.  
 E. A. Crome: pamphlet and envelope commemorating the opening of the first Heliport at Darling Harbor, Sydney, Australia, Wednesday, August 29, 1979.  
 Robert C. Ehle: score of his *Space Symphony* and a tape recording of the performance by the Denver Symphony Orchestra. (*Spaceborne Symphony*)  
 Mrs. Mary Feik: photographs of Sergei Sikorsky and Capt. Ralph Barnaby.  
 James Goode: phonograph recording of *Man on the Moon*.  
 Andrew G. Haley, Jr., and Delphine D. Haley: correspondence and reports of their father's work with the International Astronautical Federation, American Rocket Society, and books on space law.  
 Richard P. Hallion: tunnel calibration notes of Jerry Lederer on the Curtiss wind tunnel installed at New York University.  
 Holiday Film Corporation: slides of space missions.  
 Bevo Howard: photographs, documents, and posters of his events, and year-books from the "Flying Schools."  
 David Lang: two envelopes commemorating the sixtieth anniversary of scheduled air services operated by Handley Page Transport Ltd.  
 William Luria: "List of Passengers," signed by Charles A. Lindbergh and "Manifesto of Passengers in Transit."  
 David R. McLaren: 4 sets of 35mm copy negatives of P-51H's.  
 Paul Marzano: poem entitled "Apollo 11."  
 Wayne Parrish: photographs on commercial aviation.  
 Francisco D. R. Pfaltzgraff: envelope honoring the fiftieth anniversary of the *Graf Zeppelin*.  
 Lester P. Shea: pamphlet on the "Worcester Air Pageant."  
 Juan Terry Trippe: documents, photographs, and correspondence with Charles Lindbergh, and holographs.  
 Egon A. Weiss: biographical material on General Frederick E. Humphreys.  
 J. Birney Work: postcards of the International Aviation Meet, Chicago, August 1911.



## NATIONAL MUSEUM OF MAN, CENTER FOR THE STUDY OF MAN

### *Donors of Financial Support*

#### NATIONAL ANTHROPOLOGICAL FILM CENTER

Harvard University: in support of expenses for NAFC's Research Film Study of Traditional Tibetan Civilization for experimental development of filmic material on the Oracles of Ladakh.

Ambassador Marquita M. Maytag: to be applied to the salary and associated expenses of a deputy or assistant director for administration of the National Anthropological Film Center.

### *Donors and Collaborative Acquisitions*

#### NATIONAL ANTHROPOLOGICAL FILM CENTER

Lain S. Bangdel, Royal Nepal Academy: 77,385 feet of synch sound research footage on the cultural heritage of Nepal, filmed in 1980.

Elizabeth R. Dickey, University of Illinois, Urbana: 2,400 feet of synch sound research footage of cultural behaviors involved in the epidemiology of hepatitis B virus in the New Hebrides.

Wayne Dye, Summer Institute of Linguistics: 30,000 feet of synch sound research footage from traditional cultures in Papua New Guinea, filmed in 1979.

Frances Emerick: 1,200 feet of master/print film shot in India, c. 1930; 400 feet of master/print film shot in Hong Kong and Manila, 1956.

Luding Khen Rinpoche, Library of Tibetan Works and Archives: 45,000 feet of synch sound research footage of traditional Tibetan life and culture filmed in Ladakh (western Tibet), 1980.

Tokyo String Quartet: tape recordings of three performances at the Corcoran Gallery of Art, using the rare seventeenth-century Amati instruments.

Gyatsho Tshering, Library of Tibetan Works and Archives: 39,190 feet of synch sound research footage of traditional Tibetan life and culture filmed in traditional Tibetan monastic communities in India in 1980.

Scott Williams, Bellevue Community College: 20,000 feet of synch sound research footage on traditional child behavior and social interactions in Micronesia, filmed in 1980.

## NATIONAL MUSEUM OF NATURAL HISTORY

### *Donors of Financial Support*

AMAX Foundation, Inc.  
American Philosophical Society  
The American Association of  
Petroleum Geologists  
Anonymous  
Dayton Hudson Corporation and  
J. E. Caldwell Jewelers  
The Max and Victoria Dreyfus  
Foundation, Inc.  
The Eppley Foundation for  
Research, Inc.  
Exxon Corporation  
Dr. Kurt Fredriksson  
General Refractories Co.  
Sumner Gerard Foundation  
Getty Oil Co.  
Mrs. Bea Gold

The Griffis Foundation, Inc.  
The Sidney L. Hechinger Foundation  
Mrs. Amy E. Higgins  
Mr. Robert P. Higgins  
Hughes Tool Company  
Kerr McGee Corporation  
Marathon Oil Foundation, Inc.  
Dr. Brian H. Mason  
Dr. William G. Melson  
National Geographic Society  
Mr. Jack Pearce  
Mr. Lloyd E. Raport  
Dr. Harold A. Rehder  
Mr. and Mrs. Robert R. Reid, Jr.  
St. Joe Minerals Corporation  
Lewis and Rosa Strauss  
Memorial Fund

[ cont. ]

Mary Horner Stuart Foundation  
Mr. and Mrs. E. Hadley Stuart, Jr.  
William C. Sturtevant  
Time/Life Books, Inc.

Undersea Medical Society  
Mrs. Annie B. Wetmore  
Dr. George Wharton  
World Wildlife Fund

*Donors to the National Collections*

INSTITUTIONAL

Aarhus Universitet, Denmark: 2 echinoderms (335541).  
Academia Sinica, China: 121 fossils (339345, exchange); 303 plants (339484, 340772, exchanges); 2 Chinese lizards (339866).  
Adelaide, University of, Australia: 3 minerals (340628).  
Academy of Sciences, USSR: 211 plants (336676); 420 plants (337205, 337736, exchanges); 81 fossils (337353, exchange); 5 minerals (337645, exchange).  
Agriculture, U.S. Department of: 25,579 insects (338959, 341723); 238 plants (337194, 337223, 337236); 10 mollusks (335998).  
Albany Museum, South Africa: 18 fishes (338527).  
Alberta, University of, Canada: plants (338185, exchange).  
Alpine Exploration: 6 minerals (339346).  
American Museum of Natural History: 3 minerals (336959, 337455, exchanges); 3 frogs (337328, exchange).  
Ammori Prefectoral Fisheries Experimental Station, Japan: 10 fishes (335509).  
Amoy Fisheries College, China: 18 fishes (339913, exchange).  
Andhra University, India: 4 crustaceans (335912).  
Appalachian State University: 24 fossils (339617).  
Applied Marine Ecological Services, Inc.: 1,964 crustaceans (322803).  
Aquinas College: 471 crustaceans (315183).  
Arizona, University of: 1 bird skin (340490, exchange); 11 plants (338867).  
Arizona State University: 14 crustaceans (337515, 337804).  
Arkansas State University: 53 crustaceans (318233, 338766).  
Artrox: 1 mineral (337419).  
Asociacion Mexicana de Orquideologia, Mexico: 1 plant (340117).  
Auburn University: 192 crustaceans, 7 mollusks (338835).  
Auckland, University of, New Zealand: 4 minerals (326069, exchange).  
Australian Museum, Australia: 5 mollusks (338086).  
Ball State University: 1 bat (340433).  
Baltimore Insect Control and Research, Inc.: 10 crustaceans (339832).  
Battelle Columbus Laboratories: 500 worms (340434).  
Beak Consultants Incorporated: 100 mollusks (339222).  
Bernice P. Bishop Museum: 2 dragonflies (341600); 12 fishes (338525, exchange); 311 plants (337246, 337766, 339458, exchanges).  
Bideaux Minerals and Roebling Fund: 2 minerals (338942).  
Biocontrol of Weeds Laboratory, Europe: 3 weevils (338696, exchange).  
Boston University: 1,600 crustaceans (340067).  
Botanische Staatssammlung, Germany: 4 plants (338913).  
Botanischer Garten und Institut für Systematische Botanik der Universität Zurich, Switzerland: 61 plants (339460, exchange).  
Botanisches Museum Berlin-Dahlem, Germany: 44 plants (340845, exchange).  
Brigham Young University: 157 plants (338140, exchange); 9 plants (338184).  
British Museum (Natural History), England: 2 crustaceans (339341); 5 fossils (341138); 25 insects (338989, 341595); 653 fishes (337305); 38 plants (337725).  
Brown Fund: 64 fossils (339674).  
Bruce Huges Fund and Dr. Eugene I. Knez: 100 Pakistani contemporary household goods (338953).



Busch Gardens: 2 crocodiles (337940).  
 California Academy of Sciences: 4 insects (341605, 340911, exchanges); 1 mollusk (337550); 1 echinoderm slide (336144).  
 California Department of Food and Agriculture: 6 insects (341716).  
 California, University of: 29 insects (332462, 338358, exchanges); 147 crustaceans and 6 slides (326156, 337314, 337507, 337833, 338828, 339071, 339099, 339833, 340620, 340026, 340741, 341326); 3 fishes (290891); 20 echinoderms (327374, 337411, 328814); 10 minerals (336956); 1 plant (338871); 56 worm slides (339366).  
 Canada Centre for Mineral and Energy Technology, Canada: 3 minerals (338109).  
 Canada Geological Survey, Canada: 3 minerals (340229, exchange).  
 Canada Pacific Biological Station, Canada: 1 mollusk (339224).  
 Canadian Occidental Petroleum, Ltd., Canada: 1 mineral (338746).  
 Canberra Botanic Gardens, Australia: 153 plants (338202, 340823, exchanges).  
 Canfield Fund: 7 minerals (338085, 338273, 339374, 339375, 339908, 338943).  
 Canterbury, University of, New Zealand: 5 crustaceans (336785).  
 Caribbean Marine Biological Institute, Netherlands Antilles: 11 sponges and 12 slides (335524).  
 Carleton University, Canada: 19 weevils (337897, exchange).  
 Carnegie Museum of Natural History: 2 bird skins (340886, exchange).  
 Centro de Pesquisas de Cacau, Brazil: 6 plants (337750, 338884, 339503).  
 Centre de Recherches Oceanographiques, France: 2 crustaceans (315024).  
 Centre Oceanologique de Bretagne, France: 2 worms (339365).  
 Chamberlain Fund: 1 gem (337547); 1 mineral (330164); a jade vase, a charoite vase, and a charoite compote (334186).  
 Chatham Created Gems, Inc.: 5 crystals (340438).  
 Chicago, University of: 10 worms (337667).  
 Cincinnati, University of: 3,100 plants (340812).  
 Clemson University: 801 crustaceans (270309, 325357); 6,838 insects (338351).  
 Clyde F. Reed Herbarium: 7 plants (338131, 338860).  
 Colegio de Postgraduados, Mexico: 11 plants (340807).  
 College of Charleston: 5 crustaceans (337110).  
 Colorado University Museum: 253 plants (338160, exchange).  
 Colorado, University of: 35 crustaceans (337161, exchange).  
 Colorado State University Lassa Fever Multimammate Mouse Project. (See Smithsonian Institution.)  
 Commerce, U.S. Department of: 42 worms (337112, 337836, 340234, 341112); 43 crustaceans (337425, 338060, 338279); 424 fossils (337323); 26 mollusks (335392); 50 volcanic glasses (340667).  
 Commonwealth Institute of Entomology, England: 5 wasps (338356).  
 Commonwealth Scientific and Industrial Research Organization, Australia: 2 minerals (337475, 339646); 3 grasshoppers (338347).  
 Connecticut, University of: 1 plant (337209).  
 Continental Shelf Associates, Inc.: 13 echinoderms (334932).  
 Copenhagen, University of, Denmark: 2 corals and 1 sponge (334534).  
 Cornell University, L. H. Bailey Hortorium: 4 plants (336653, 337212); 17 plants and 4 photographs (336654, 337232, 337692, exchanges).  
 Corpus Christi State University: 13 echinoderms (333481, 337517).  
 Cowell Jade Pty., Ltd., Australia: 1 mineral (337459).  
 Dallas Museum of Natural History: 9 bird skeletons (341622).  
 Dar es Salaam, University of, Tanzania: 4 worm slides (338533).  
 Defense, U.S. Department of: 42 insects (338964); 2 shrews and 10 rodents (334153); 20 crustaceans (332050); 1 frog and 2 geckos (288657).  
 Department of Scientific and Industrial Research, New Zealand: 27 plants (340155); 1 meteorite (340880).



Departamento de Conservacao Ambiental, Brazil: 45 plants (336650, 336655, 338865).  
 Dublin, University of, Trinity College, Ireland: 20 echinoderms (312373).  
 Duke University: 88 crustaceans (338322, 339084); 1 echinoderm (340005); 7 minerals (341012, exchange); 146 plants (340785, exchange); 13 plants (340811, exchange).  
 Dunstaffnage Marine Research Laboratory, Scotland: 56,282 crustaceans (337546).  
 Eastern Kentucky University: 1 mineral (337525, exchange).  
 Environmental Protection Agency, U.S. Department of: 5 crustaceans (313398, 339690).  
 Fairchild Tropical Garden Herbarium: 198 plants (338206, 338921, 340158).  
 Field Museum of Natural History: 5 ferns (338159, 338915); 12 ferns (338929, 339489, exchanges); 11 meteorites (326335); 1 meteorite (298368, exchange); 629 plants (338150, 338876, exchanges).  
 Florida A&M University: 1 insect (340601, exchange).  
 Florida Atlantic University: 92 crustaceans (318428).  
 Florida Department of Natural Resources: 36 crustaceans (340373); 211 corals (338475); 583 mollusks (337664).  
 Florida International University: 1 echinoderm (339616); 54 crustaceans (340238).  
 Florida Ministry of Agriculture and Fisheries: 7 echinoderm slides (340710).  
 Florida, University of: 4 echinoderms (305668); 2 plants (340157).  
 Florida State Museum: 449 crustaceans (319456, 337329, 340502).  
 Florida State University: 19 crustaceans and 24 slides (336439, 339102); 20 plants (338922, 340769).  
 Forschungsinstitut Senckenberg, Germany: 4 crustaceans (339398).  
 Fundacao Estadual de Engenharia do Meio Ambiente, Brazil: 8 plants (338844, 338873).  
 Fundacao Instituto Brasileiro de Geografia e Estatistica, Brazil: 418 plants (340159, 340773, 340774).  
 Fundacao Universidade de Brasilia, Brazil: 90 mollusks (338049).  
 Fundacion Miguel Lillo, Argentina: 212 plants (338875, exchange).  
 General Services Administration, U.S.: a diamond and platinum necklace (339118).  
 Geological Museum, China: 18 minerals (336872, 337949, exchanges).  
 Geological Museum, Denmark: 1 mineral (338724, exchange).  
 Georgia Department of Natural Resources: 65 crustaceans (324468, 338802); 3,200 beetles (338981).  
 Goteborg, University of, Sweden: 32 worms and 43 slides (337520, 340740).  
 Government Chemical Laboratories, Australia: 7 minerals (338362); 52 cores (340949).  
 Gradina Botanica-Herbar, Romania: 122 plants (340103, exchange).  
 Harold L. Lyon Arboretum: 176 plants (340857).  
 Harvard University, Botanical Museum: 1 plant (337734); Farlow Herbarium: 44 plants (340150); Herbaria: 38 plants (337276, 338154, 338927); 153 plants (340824, exchange); Mineralogical Museum: 9 minerals (337453, 337499, 339113, exchanges).  
 Hawaii, University of: 10 sponges (332849); 436 crustaceans (339580); 341 plants (340152, exchange).  
 Health, Education and Welfare, U.S. Department of: 1 mammal (339823). (See also, United Nations World Health Organization.)  
 Helsinki, University of, Finland, Botanical Museum: 54 plants (338130, exchange); Institute of Geology and Mineralogy: 1 mineral (339647).  
 Herbario Alberto Castellanos, Brazil: 32 plants (340170).  
 Herbario Vargas, Peru: 2 plants (340090).

Herbarium Bogoriense, Indonesia: 442 plants (336682, exchange).  
 Herbarium Bradeanum, Brazil: 56 plants (337264, 338920, 338935, 339501); 2 plants (339501, exchange).  
 Herbarium du Centre Orstom, France: 99 plants (338134, 340153).  
 Heron Island Research Station, Australia: 2 crustaceans (337834).  
 Humboldt State University: 2 worms (338821).  
 Idaho Department of Health and Welfare: 10,107 crustaceans (331616).  
 Illinois, University of: 3 plants (340151, exchange).  
 Indiana University: 7 crustaceans (337945); 122 fossils (338441, 340289).  
 Institut der Universitat Heidelberg, West Germany: 1 mineral (340228).  
 Institute of Biological Sciences, Romania: 39 beetles (338686, exchange).  
 Institute for Systematic Botany, The Netherlands: 117 plants (340099).  
 Instituto Botanico, Venezuela: 299 plants (338145, 340095, 340115); 27 plants (338890, 340178, exchanges).  
 Instituto Botanico A. J. Cavanilles, Spain: 120 plants (336643).  
 Instituto de Biologia da UNICAMP, Brazil: 269 plants (338866, exchange).  
 Instituto de Botanica, Brazil: 144 plants (337738, exchange).  
 Instituto de Botanica Darwinion, Argentina: 107 plants (338905, exchange); 58 plants (339459).  
 Instituto de Pesquisas Agronomicas, Brazil: 1 plant (337733).  
 Instituto de Pesquisas de Marinha, Brazil: 106 crustaceans (320473).  
 Instituto del Mar del Peru, Peru: 9 crustaceans (337313).  
 Instituto Evandro Chagas, Brazil: 1 mouse (339578).  
 Instituto Nacional de Investigaciones, Mexico: 23 plants (337265).  
 Instituto Nacional para la Conservacion de la Naturaleza, Spain: 2 hares (340619).  
 Instituto Universitario de Tecnologia de Coro, Venezuela: 3 plants (338861).  
 Interior, U.S. Department of: Bird and Mammal Laboratory: 42 crustaceans (337413); Bureau of Land Management: 523 echinoderms (337093); 5,000 mollusks (337093); 5 plants (338880); 40,851 worms (337093, 339841, 340739); Geological Survey 3 crustaceans (337164); 2,549 fossils (337318, 337322, 337359, 337361, 337506, 337837, 337931, 337932, 337961, 338056, 338284, 338649, 339085, 339712, 339285, 339618, 339670, 339825, 340085, 340242, 340243, 340367, 340382, 340508, 340706, 340918, 341010); 7,202 minerals (336694, 337458, 340436); 610 rocks, 299 glasses, 32 petrology specimens (340381, 340946, 340947, 341242); 208 mollusks (338542, 340372); 17 plants (338899); National Fish and Wildlife Laboratory: 7,954 bird skins and skeletons (337825, 341620); 3,447 mammals (341486); 3,180 reptiles and amphibians (335561, 337562, 338065, 338740, 339868, 339940, 340500); National Park Service: 1 snake (335453); 273 human skeletal remains (341573); Office of Endangered Species: 1 lizard (335935); Office of Planning and Coordination: 3 lizards (339939).  
 Jardim Botanico do Rio de Janeiro, Brazil: 392 plants (336652, 337187, 338841, 340770).  
 Jewel Tunnel Imports: 1 mineral (339766).  
 Johns Hopkins University: 3 sponges (338825).  
 Karachi University, Invertebrate Reference Museum, Pakistan: 2 crustaceans (337965).  
 Kristalle: 3 minerals (340231, exchange).  
 Kryolitselskabet Oresund, Denmark: 1 ironstone (340955).  
 Laboratoire de Mineralogie et Geologie, France: 1 mineral (339347).  
 Lae, Papua, and New Guinea, Government of, Department of Primary Industry: 32 plants (339476, exchange); 87 plants (338155, 339442, 339475).  
 Lafayette Zoological Park: 1 sea lion (341529).  
 Laval Universite, Canada: 1 plant (337700).  
 Liege, University of, Belgium: 2 minerals (338111).



Limnologische Flusstation des Max-Planck Instituts, West Germany: 1 beetle (330200).  
 Lomonosov State University of Moscow, USSR: 3 plants (338126, exchange).  
 Longwood Gardens: 1 fern (336656).  
 Los Angeles County Museum of Natural History: 32 ferns (338930); 45 plants (337775, 338127); 2 mollusks (338051).  
 Los Angeles Zoo: 60 mammals (334690).  
 Louisiana State University: 74 crustaceans (337937, 340736); 1 plant (337768); 71 worms and 23 slides (337666, 340019, 340328).  
 Louisville, University of: 59 crustaceans (341211).  
 Lyko Mineral and Gem, Inc.: 2 minerals (341058).  
 Maine, University of: 3 crustaceans (341199).  
 Marie Selby Botanical Garden: 237 plants (337193, 338919, 340130, 340831, 337208); 159 plants (338919, exchanges).  
 Marine Biological Association, England: 28 crustaceans and 2 slides (338617).  
 Marine Resources Research Institute: 17 crustaceans (332894, 336784, 337660).  
 Maryland Office of Chief Medical Examiner: human skeletal remains (338300, 338301).  
 Maryland, University of: 653 crustaceans (329660, 339836); 1 echinoderm (338715); 1,326 plants (340844); Appalachian Environmental Laboratory: 37 crustaceans (327002); Chesapeake Biological Laboratory: 2 echinoderms (340066).  
 Massachusetts, University of: 158 plants (339477).  
 Medical College of Ohio: 94 crustaceans (339837, 340374).  
 Memorial University of Newfoundland, Canada: 3 crustaceans (339834); 6 echinoderms (315042).  
 Memphis State University: 3 plants (337259); 29 crustaceans (338048).  
 Miami, University of: 5 bird skins (341617, exchange); Rosenthal School of Marine and Atmospheric Science: 2,527 echinoderms (332276); 30 crustaceans (336431).  
 Michigan, University of: 1 plant (337732); Herbarium: 49 plants (336646, 337682, 337687, 338868); Museum of Zoology: 35 crustaceans (337661); 4 lizards (319453, exchange), 1 worm (341275).  
 Michigan State University, Herbarium: 3 plants (340175, exchange).  
 Micronesian Mariculture Demonstration Center, Caroline Islands: 35 mollusks (337674).  
 Milwaukee Public Museum Herbarium: 235 plants (337230, exchange).  
 Mineral Fund: 144 minerals (338407, 339907, 340266, 340399, 340398, 341057, 340411).  
 Mineral Kingdom of Woodmere: 2 minerals (338277, 340627).  
 Mineral Resources Department, Fiji Islands: 26 crustaceans (337104).  
 Ministry of Natural Resources, IDERENA, Colombia: 13 plants (338864).  
 Missouri Botanical Garden: 1,373 plants (336644, 336645, 337206, 337251, 337678, 337695, 338141, 338158, 338872, 338891, 340088, 340162, 340767, 340808); 58 plants (338141, 340828, exchanges).  
 Missouri, University of, College of Agriculture: 2 plants (337239).  
 Museo de Historia Natural, Herbario San Marcos, Peru: 13 plants (337218).  
 Museo Nacional de Costa Rica, Costa Rica: 3 ferns (340179).  
 Museo Nacional De Historia Natural, Dominican Republic: 3 bird skins (341244, exchange).  
 Museu Botanico Municipal, Brazil: 63 plants (337201, 338133).  
 Museu Paraense Emilio Goeldi, Brazil: 34 plants (339483, exchange).  
 Museum National D'Histoire Naturelle, France: 3 crustaceans (337675); 2 crustaceans (338805, exchange); 4 minerals (338743, exchange); 267 plants and 18 photographs (336651, 337749, 340156, exchanges); 5 worms (298891, exchange).



National Aeronautics and Space Administration: 9 meteorites and 1 Tektite (339980).

National Aeronautics and Space Administration Fund: 1 meteorite (330618).

National Botanic Garden, Ireland: 1 plant (340106).

National Geographic Society: 12 gorilla skeletons (341302).

National Herbarium; Botanical Research Institute; South Africa: 7 plants (340820).

National Museum of Natural Sciences, Canada: 279 plants (337215, exchange).

National Museum, New Zealand: 10 bird skins and 19 skeletons (339782, exchange); 11 fishes (341325).

National Museum of Victoria, Australia: 7 crustaceans (338631, exchange).

National Science Museum, Japan: 5 mollusks (337041); 2 petrology and volcanology specimens (340950, exchange).

Naturhistoriska Riksmuseet, Sweden: 20 worms (262572, exchange); 29 plants (340110).

Nebraska, University of: 1 plant (340164).

Negev, University of, Israel: 2 minerals (339926).

New Brunswick, University of, Canada: 1 coral (337824).

Newcastle Upon Tyne, University of, England: 1 mineral (340224).

New England Regional Primate Research Center: 20 primates and 1 shrew (337673).

New Hampshire, University of: 1 mollusk (312129).

New Mexico, University of, Institute of Meteorites: 3 meteorites (337953, exchange).

New York Botanical Garden: 983 plants (340768, 340789, exchanges); 1,058 plants (339438, exchange); 1,350 plants (337219, 337226, 337708, 337740, 338204, 338840, 339482, 340181).

New York Zoological Society: 21 worms (338831); 1 crustacean (339266).

New Zealand Oceanographic Institute, New Zealand: 3 corals (340507, exchange).

Nihon University, Japan: 6 crustaceans (340412, exchange).

North Carolina, University of: 170 crustaceans (326925); worms (338622); 35 fossils (340557); 3 worms (338788).

Northeastern University, Marine Science Institute: 1 worm and 4 slides (339225).

Northern Iowa, University of: 840 crustaceans (333132).

Northern Territory, Department of, Australia: 189 crustaceans (332967); 43 plants (337227, 339494).

Okayama University, Japan: 1 mineral (339373).

Oklahoma, University of: 1 echinoderm (340023).

Oregon Department of Agriculture: 20 insects (339353, exchange).

Oregon State University: 4 crustaceans (339131); 4 fishes (340217).

Oxford, University of, England: 4 echinoderms (340269).

Pala Properties International, Inc.: 22 minerals (337477, 337948, 337969, 337967, 339545, 341159, exchanges); 18 minerals (338248, 337967, 340440, 340921, 341269, 341500); and Roebling Fund: 4 minerals (337380).

Palemer College: 10 echinoderms (298057).

Panama, Embassy of: a Cuna Indian woman's costume (341572).

Paul and Beekman, Inc.: 1 mammal, 10 mollusks, 6 worms (339072).

Philadelphia Academy of Sciences: 29 fishes (338621, 339676).

Phillips-Universitat Marburg, West Germany: 1 mineral (341503).

Plumbago Mining Corp.: 11 minerals (339363).

Pomona College: 46,242 insects (341640).

Port Harcourt, University of, Nigeria: 20 crustaceans, 3 mollusks (339762); 1 echinoderm (339196).

Prefeitura Municipal de Curitiba, Brazil: 39 plants (339452).

Pretoria, University of, South Africa: 2 insects (333872, exchange).  
 Princeton University: 141 fossils (339641).  
 Puerto Rico Center for Energy and Environment Research: 9 echinoderms (340212).  
 Puerto Rico, University of: 2 echinoderms (334172); 24 crustaceans (339287).  
 Queensland Herbarium, Australia: 127 plants (336685, exchange).  
 Queensland, University of, Australia: 7 crustaceans (337835).  
 Rhode Island, University of, Narragansett Marine Laboratory: 14 crustaceans (330844).  
 Rhodes University, J. L. B. Smith Institute of Ichthyology, South Africa: 31 fishes (334847, 338629).  
 Rijksmuseum van Natuurlijke Historie, Netherlands: 4 moths (324728); 30 crustaceans (341274).  
 Roebling Fund: 72 Minerals (337343, 337381, 337417, 337449, 337539, 337909, 337968, 338093, 338274, 339583, 339584, 339643, 339883, 339885, 339904, 339905, 339906, 339909, 340225, 340267, 340408, 341037); and Van Scriber's Minerals (337503); and Sr. Carlos P. Barbosa (339644). (See also Bideaux Minerals.)  
 Rome, University of, Italy: 3 minerals (341501).  
 Rothamsted Experimental Station, England: 26 worms (337832).  
 Royal Botanic Gardens, Australia: 46 plants (337253, exchange).  
 Royal Botanic Gardens, England: 1,321 plants and 4 fruits (337257, 337701, 338879, 338932, 338933, 340101, exchanges).  
 Royal Botanic Gardens, Scotland: 1 plant (339491).  
 Royal Ontario Museum, Canada: 40 mollusks, 3 worms (336993); 51 fishes (337091, 337671); 4 minerals (337452, 339198, exchanges).  
 Ruhy-Universitat Bochum, West Germany: 4 minerals (341504).  
 St. Joseph's College, The Rapinat Herbarium, India: 43 plants (337221, 340142).  
 St. Mary's University, Canada: 9 crustaceans (313438).  
 San Antonio Zoo and Aquarium: 10 crustaceans (321210).  
 San Diego Museum of Natural History: 326 plants (339441, exchange).  
 San Diego Zoological Gardens: 4 mammals (339083).  
 Sea World: 8 bird skins (338326).  
 Skidway Institute of Oceanography: 11 echinoderms (339284, 340068).  
 South Africa Geological Survey: 1 mineral (338787).  
 South African Association for Marine Biological Research Oceanographic Research Institute, South Africa: 1 fish (341063).  
 South Alabama, University of: 166 crustaceans (317806, 337115, 341185).  
 South Australian Museum, Australia: 1 bird (339427, exchange); 3 meteorites (337799, exchange).  
 South Australia State Herbarium, Australia: 90 plants (338152, exchange).  
 South Carolina Marine Resources Research Institute: 9,293 crustaceans (339880).  
 South Carolina Wildlife and Marine Resources Department: 16,039 crustaceans, 54 worms (333646).  
 South Carolina, University of, Belle W. Baruch Institute for Marine Biology and Coastal Research: 97 crustaceans and 1 slide (338041, 339149, 339738).  
 South Florida, University of: 87 plants (337769, 338869); Herbarium: 3 plants (337681, 338914).  
 Southeastern Oklahoma State University: 1 plant (339480).  
 Southern Arkansas University: 2,572 crustaceans (316027).  
 Southern California, University of: 10 crustaceans (315498); 580 echinoderms (338052, 340919); Allan Hancock Foundation: 287 crustaceans (318235, 321275, 339247, 339288, 340709, 340727); 5 worms (340983).  
 Southern Illinois University: 464 crustaceans (337946, 339396, 340511).  
 Southwest Foundation for Research and Education: 1 mammal (335562).



Southwestern Louisiana, University of: 90 plants (338870, exchange); 18 crustaceans (339316).

Station Marine d'Endoume, France: 3,100 echinoderms (327934); 2 worms (329113).

Stuart Fund: 209 minerals (335473, 337415, 337416, 338811, 339025, 339026, 339114, 339117, 339882, 339884, 339886, 339911, 340223); 5 minerals (339911, exchange).

Sul Ross State College: 33 plants (339457).

Sydney, University of, Australia: 17 worms (326843).

Tampa, University of: 3 crustaceans (337162).

Tel-Aviv University, Israel: 4 butterflies (341717).

Tennessee, University of: 311 crustaceans (337040, 338047, 340510); 2 ferns (338183); 137 mollusks (340979).

Texas University: 149 echinoderms (324599); 27 insects (341597); Memorial Museum: 12 crustaceans (336923).

Texas A&M University: 5 echinoderms (336915); 20 insects (338963, 341603); 13 plants (337746); Tracy Herbarium: 261 plants (338203, exchange).

Texas Christian University: 7 fossils (341139).

Texas Instruments Incorporated: 3 crustacean slides (340213).

Texas Tech University: 505 crustaceans and 27 slides (320891, 321287, 324535, 326029).

Texas Winkler County Sheriff's Office: human skeletal remains (338305).

Tokyo University of Agriculture, Japan: 4 insects (338350).

Tokyo, University of, Japan: 280 plants (337677, 337726, exchanges); Ocean Research Institute: 43 worms (337545, 341497); 193 plants (340127, exchange).

Toronto, University of, Canada: 2 crustaceans (300013).

Transvaal Museum, South Africa: a toad (338067, exchange).

Tropical Science Center, Costa Rica: 11 plants (338163).

Tufts University, Herbarium: 312 plants (337235, 338198, 340104, exchanges).

Tulane University: 1 bamboo (338162); Museum of Natural History: 10 fishes (340414, exchange).

Tulsa, University of: 1 crustacean (337414).

United Nations World Health Organization and U.S. Department of Health, Education and Welfare: 388 mammals (338318).

Universidad Austral de Chile: 36 crustaceans (319262).

Universidad Catolica Madre y Maestra, El Herbario Rafael M. Moscoso, Dominican Republic: 27 plants (337188, 337262, 340135).

Universidad Central de Venezuela, Venezuela: 24 plants (336642).

Universidad de Los Andes, Venezuela: 92 plants (337249, 338197, 339435).

Universidad Interamericana de Puerto Rico: 11 crustaceans (334547).

Universidad Mayor de San Andres, Instituto de Ecologia, Bolivia: 218 plants (340794).

Universidad Nacional de Colombia, Instituto de Ciencias Naturales, Colombia: 347 plants (340111, 340796).

Universidad Nacional de Cordoba, Argentina: 9 plants and 7 photographs (297720).

Universidad Nacional de la Plata, Argentina: 6 insects (338978).

Universidad Nacional del Nordeste, Argentina: 90 plants (337693).

Universidad de Oriente, Venezuela: 17 plants (338916).

Universidade de Sao Paulo, Instituto de Biociencias, Brazil: 12 insects (338955); Instituto Oceanografico: 21 crustaceans (318274); 7 crustaceans (338365, exchange).

Universidade Federal do Parana, Brazil: 38 plants (300570).

Universite d'Aix-Marseille, France: 74 crustaceans (322585); 2 echinoderms (340022).

Universitetet I Bergen, Norway: 5 crustaceans (338437).



Universitetet i Tromsø, Tromsø Museum, Norway: 1 mineral (337474).  
 Universitetets Zoologiske Museum, Denmark: 7 crustaceans (318135); 500 worms (339665).  
 Universität Hamburg, Zoologisches Institut und Museum, Germany: 17 worms (294920, exchange).  
 University College of Swansea, United Kingdom: 215 worms (325068); 1 crustacean (338651).  
 Uppsala, University of, Herbarium, Sweden: 23 mosses (340791, exchange).  
 Utah State University: 63 plants (338934, exchange).  
 Van Scliver's Minerals: See Roebling Fund.  
 Victoria, University of, Canada: 3 worm slides (340459).  
 Virgin Mining Company: 1 mineral (338110).  
 Virginia Institute of Marine Science: 5 worms (338951); 13 crustaceans (319239, 340287); 16 fishes (340868).  
 Virginia Polytechnic Institute and State University: 20 insect slides (338957).  
 Virginia Chief Medical Examiner: human skeletal remains (338302); 2 human skulls (338303, 338304).  
 Virginia State Library: human skeletal remains (338306).  
 Volcani Center, Israel: 2 insect slides (338958).  
 Washington, University of: 35 crustaceans (313464); 2 minerals (338744); Friday Harbor Laboratories: 76 echinoderms (333512, 339047, 339582); Herbarium: 1 plant (340821).  
 Western Australian Museum, Australia: 25 mollusks (338433, exchange); 150 mollusks (341019).  
 Western Minerals: 3 minerals (340226, exchange).  
 William and Mary College: 15 crustaceans, 1 mollusk, 16 worms (338479).  
 Wisconsin, University of: 4 crustaceans (338607); 8 minerals (338745); Herbarium: 52 plants (336678, 337748, 337764, 340119); 108 plants (338911, exchange).  
 Woods Hole Oceanographic Institution: 1 echinoderm (338716); 14 crustaceans, 20 worms (339295); 3 crustaceans, 546 worms (339828); 60 fossils (339865).  
 Wright State University: 1 crustacean (339581).  
 Wyoming, University of: 1 mammal (341487).  
 Yale University: 51 mammals (339349); Peabody Museum of Natural History: 1,309 birds (341245); 263 reptiles and amphibians (339349).  
 Yokosuka City Museum, Japan: 1 fish (339297).  
 Zoologisk Museum, Denmark: 2 mollusks (340559).

#### INDIVIDUALS

Dr. Robert E. Acciavatti: 70 beetles (337902, exchange).  
 P. J. Adams: 2 minerals (341270).  
 Dr. Joachim Adis: 13 beetles (338967).  
 Dr. David G. Ainley: 51 bird skeletons (340887).  
 Benito Alarcon F.: 1 mollusk (337345).  
 Dr. Robert T. Allen: 7 beetles (341591).  
 Dr. Ted T. Allen: 2 bird skeletons (339982).  
 Roger A. Anderson: 1 fossil horse skull and a molar (339165).  
 Dr. Susan Anderson: 4 minerals (338750, 339927).  
 Anonymous: 1 Chinese embroidered wall hanging (339404).  
 Dr. Lorenzo F. Aristarain: 2 minerals (336855, 338276); 1 mineral (340626, exchange).  
 Mrs. Andrea Armstrong: 231 insects (341602).  
 John S. Ash: 1 bird (341724).  
 Dr. Sidney R. Ash: 50 fossil plants (339577).  
 Col. Whitney Ashbridge: 1 piece of Samoan tapa cloth (339401).

Wallace L. Ashby: fossil seal remains (339318).  
 Dr. Allan Ashworth: 20 insects (339967).  
 Dr. William R. Atchley: 65 insects (341239).  
 Dr. Thomas H. Atkinson: 4 beetles (340875).  
 Rod Attrill: 1 frog (338630).  
 James R. Bain: 2 skeletons and 1 embryo of free-tailed bats (341210).  
 Peter Ballman: 1 fossiliferous limestone (340952).  
 Harold H. Banks, Jr.: 9 minerals (338785).  
 Dr. Richard M. Baranowski: 12 lace bugs (338982).  
 Carlos P. Barbosa: see Roebling Fund.  
 Dr. Frederick S. Barkalow, Jr.: 250 mammals, 18 bound theses and reprints (333244).  
 Dr. Fred A. Barkley: 9 plants (338931).  
 John Barlow: 1 mineral (337423).  
 Roger Barnett: 6 minerals (337418).  
 Dr. Thomas C. Barr: 2 centipedes (338988).  
 Luizhelio Barreto: 3 minerals (338751).  
 Juan Enrique Barriga: 472 beetles (340908, 341030, exchange).  
 John Baum: 4 minerals (338741, 341256).  
 Dr. Richard W. Baumann: 18 insects (338343).  
 Dr. Frederick M. Bayer: 1,000 marine mollusks (335760).  
 Dr. Richard A. Bazzoni: 3 minerals (338747).  
 J. H. Beach: 73 beetles (339968).  
 Mr. and Mrs. Donald C. Beatty, Sr.: three-fifths undivided interest in the Jivaro Indian Collection (341779).  
 Dr. Harold H. Beaver: 7 fossils (339343).  
 Dr. Robert C. Bechtel: 50 lace bugs (338340).  
 Alan F. Beede: 1 covered basket (339417).  
 Alberto Bersani: 2 minerals (339544, exchange).  
 Julio L. Betancourt: 25 insects (341593).  
 Cheryl Bevensee: see Morgan Bevensee.  
 Morgan Bevensee, Sean Bevensee, and Cheryl Bevensee: 1 squirrel (341115).  
 Sean Bevensee: see Morgan Bevensee.  
 Vijay Bhargava: 1 brass betel nut cutter (339413).  
 Harvey S. Biddle: 5 minerals (341304).  
 Richard A. Bideaux: 2 minerals (334474); 1 gem (338613).  
 Dr. Robert Bieri: 44 crustaceans (340512).  
 Mrs. Howard Bingham: 1 piece Samoan tapa (339415).  
 Charles Birkeland: 3 echinoderms (337551).  
 Estate of Mrs. Doris Holmes Blake: 300 mollusks, 7 crustaceans (338819); 61 insects (341575).  
 Andre Blanchard: 1,010 moths (338966, 338997, 339422, 341599).  
 Francis S. Blasdell: 6 salamander skeletons (338762).  
 Charles D. Blome: 184 fossil slides (340215).  
 Warren C. Blow: 76 mollusks (338055).  
 Ronald L. Boatman: 1 mineral (337464).  
 Arthur E. Bogan: 15 mollusks (337963).  
 Dr. Gerald Boles: 3 stoneflies (341240).  
 Dr. Patricia Bonamo: see Dr. James D. Grierson.  
 David Bornet: 72 archer's thumb rings (338313).  
 Dr. Robert Bouwer: 8 beetles (339709, exchange).  
 Jeffrey Boyd: 29 centipedes (341581).  
 Edward Myer Braiman: 3 gems (338638, 338639).  
 Paul Brainard and Mrs. Pearl D. Brainard: engraved ostrich egg shell (338324).  
 Eldon Branch: 7 fossils (337377).  
 Tristao Valente e Branco: 118 beetles (339730, exchange).  
 Mrs. Twila Bratcher: 1 mollusk (336926).

Dr. Gernot Bretschko: 3 echinoderms (335516).  
 George Brewer: 25 minerals (336957, 338722, 338827); 4 minerals (340227, 340522, exchange).  
 Cheryl Bright: 2 worms (340084, 340211).  
 Dr. Robert W. Brink: 2 gems (338783).  
 E. E. Brown: 2 frogs (340708).  
 Helmut Bruckner: 1 mineral (341278, exchange).  
 W. C. Brumbach: 76 plants (340134).  
 Percival F. Brundage: 5 Japanese carvings and ceramics (338311).  
 Dr. W. R. Bryant: 2 gems (338808).  
 Dr. R. E. Bugbee: 29,040 insects (338973).  
 Dr. Daniel Bernard Bull: 686 bird eggs and nests (329764).  
 Dr. T. E. Bunch: 1 meteorite (328812).  
 Beatrice L. Burch: 6 crustaceans (336327); 1 worm (341102).  
 Dr. E. A. J. Burke: 5 minerals (341257).  
 Dr. James Burnett-Herkes: 2 mollusks (336927).  
 Dr. John J. Burns: see Dr. Francis H. Fay.  
 Dr. John M. Burns: 1,571 butterflies (338998).  
 Arthur J. Burstein (Deceased): see Maxwell Burstein.  
 Barnet Burstein: see Maxwell Burstein.  
 Hyman Burstein: see Maxwell Burstein.  
 Maxwell Burstein, Arthur J. Burstein (Deceased), Barnet Burstein, and Hyman Burstein: a platinum, diamond and sapphire ring, a platinum and diamond bracelet, a platinum and diamond brooch, a yellow-gold ring (337910).  
 Dr. Donald B. Cadien: 90 crustaceans (337648).  
 Dr. J. Maldonado Capriles: 806 insects (329596, 341237).  
 Dr. Iosif Capuse: 15 butterflies (341227).  
 Dr. David C. Carlson: 7 beetles (339963).  
 Dr. Michele Catti and Dr. Marinella Franchini-Angela: 1 mineral (339543).  
 Dr. Peter Cerny: 1 mineral (340232, exchange).  
 Luisa Martinez Chacon: 8 fossils (340890, exchange).  
 Dr. C. Kent Chamberlain: 7 fossils (341038).  
 Dr. Steven M. Chambers: 113 mollusks (337930).  
 Dr. Jack H. Chandler, Jr.: 50 mollusks (333096); 2 crayfish (339844).  
 M. R. Chappell: 9 mollusks (338671).  
 Dr. Richard Chase: 2 basalts (339001).  
 Dr. Hu Cheng-zhi: 11 minerals (339546, exchange).  
 Dr. Richard H. Chesher: 8 mollusks, 12 echinoderms (340618).  
 Dr. and Mrs. Robert C. C. Chiu: 13 gems (337460, 338609).  
 Samuel J. Ciura, Jr.: 4 fossils (341182).  
 Ailsa M. Clark: 2 echinoderms (340483).  
 Dr. J. F. Gates Clarke: 201 insects (341590).  
 Dr. Kerry B. Clarke: 7 mollusks (337665, 339539).  
 Dr. Malcolm R. Clarke: 15 fossils (339640).  
 Dale H. Clayton: 1 red bat (337098).  
 Kathryn A. Coates: 14 worm slides (338395).  
 Rick Coffey: see David Cramer.  
 Dr. William P. Coffman and Bernard G. Swegman: 21 caddisflies (341613).  
 Dr. James E. Conkin: 19 fossils (338436).  
 Mr. and Mrs. Reginald W. F. Conway: 1 gem (338678).  
 Mrs. Howard Cook: 1 nephrite bowl (338769).  
 John W. Cooper: 10 mollusks (341164).  
 Herbert Corbett: 3 minerals (337947).  
 Mrs. Frances B. Cornell: 1 opal brooch and 1 turquoise and silver necklace (338807).  
 Robert F. Correia: 1 fossil clam (338057).  
 Dieter Cosman: 1 mollusk (337482).



Mrs. Phyllisann Hibben Courtis: 7 cornhusk dolls (340872).  
 Dr. Jean Michel Cousteau: 2 sponges (324892).  
 David Cramer, Rick Coffey, and Steve Heaton: 1 fossil rib (339286).  
 Don Crissinger: 1 fossil upper jaw (339642).  
 Jarrett L. Cross: 5,639 insects (338999).  
 Dr. Alain Crossnier: 15 echinoderms (318805).  
 Dr. E. J. Cunningham: 7 gems (338719).  
 Edward B. Cutler: 16 worms (338822).  
 Dr. Bruce E. Dahrting II: 1 gem (338717); 27 minerals (339116).  
 Dr. Steven P. Darwin: 1 plant (340819).  
 Dr. Brijraj K. Das: 1 hornblende-garnet rock (340669).  
 Jim Davidson: 1 fossil seal tooth (339101).  
 Dr. and Mrs. Donald R. Davis: 2,303 insects (338996).  
 L. Nevil Davy: 3 gems (338612).  
 George E. Dean: 1 gem (338772).  
 T. Deans: 1 mineral (337463).  
 Dr. Roger-Paul Dechambre: 5 beetles (340599, exchange).  
 Dennis M. DeLeo: 1 gem (338680).  
 Dr. Michel Deliens: 1 mineral (340724, exchange).  
 Genoveva deMahien: see A. Lucia Gamba.  
 Earl A. Dennis: 1 flax skirt (339411).  
 Dr. D. L. Deonier: 2,216 insects (339973).  
 Dr. Deborah M. Dexter: 4 worms (337841).  
 Robert T. Dodd: 18 meteorites (339975, exchange).  
 Dr. Donald V. Doell: 1 mineral (340731).  
 George H. Dorcy: worms (340024).  
 Laurence J. Dorr: 11 skipper butterflies (338344).  
 Robert Dow: 8 minerals (337478).  
 Dr. Dee S. Dundee: 6 mollusks (336276).  
 Daphne F. Dunn: 2 echinoderms (339197).  
 Mrs. Ruth Dunn: 1 bamboo quiver and 8 blowgun darts (339412).  
 Dr. Joseph M. Dzik: 2 gems (338681).  
 Shigeru Eda: 100 beetles (338336, exchange).  
 Alan G. Eddy: 515 mollusks (267339).  
 Dr. D. W. Edmonds: 1 insect (341584).  
 Bruce M. Edsall: 1 platinum, diamond, and sapphire bracelet (338275).  
 Gary Edson: 1 mineral (337498).  
 David D. Eidahl: 2 gems (338059, exchange).  
 Profesor Thomas Eisner: 10 insects (338990).  
 Dr. K. C. Emerson: 1,418 lice slides (339969).  
 Louise H. Emmons: 65 assorted squirrels and 1 African porcupine (341209).  
 O. J. Emory, Jr.: 42 pieces of Siamese ceramic wares (338310).  
 Dr. Dodge Engleman: 26 ground beetles (338992); 1 insect (341588).  
 Dr. W. G. Ernst: 14 eclogitic rocks (339424).  
 Christer Erseus: 11 worm slides (338396).  
 Linda Escobar: 6 plants (338129, 336638).  
 R. Michael Ewing: 3 worms (341122).  
 Dr. Muriel Fairon-Demaret: see Professor Maurice Streel.  
 John H. Fales: 6 skipper butterflies (338345).  
 Al Falster: 36 minerals (338092).  
 Dr. Francis H. Fay and Dr. John Burns: 2 ribbon seals (341530).  
 Dr. Lawrence H. Feldman: 22 mollusks (336002, 338082, 339942).  
 Dr. Douglas C. Ferguson: 2,226 moths (338995).  
 Dr. George E. Ferguson: 5 insects (339871).  
 Dr. Dan Feriozi: 1 diamond and ruby ring (338683).  
 Dr. and Mrs. Leo S. Figiel and Dr. and Mrs. S. J. Figiel: pair of Indian palace doors (338308).

Dr. and Mrs. S. J. Figiel: see Dr. and Mrs. Leo S. Figiel.  
 Dr. Cabell B. Finch: 1 mineral (341267).  
 Penny Firth: 20 insects (338962).  
 Ronald R. Firth: 1 opal (338079).  
 Elaine Fisher: 11 worms (336921).  
 Dr. John W. Fitzpatrick: 3 bird skins (339428).  
 Carol M. Flint: 613 mosquitoes (341236).  
 Dr. Oliver S. Flint, Jr.: 192 insects (338970); see also Dr. Paul Spangler (337803).  
 Dr. George W. Folkers: 4 beetles (341598).  
 George C. Fonger: 3 fossil bird bones (338401).  
 Dr. Helen P. Foreman: 12,000 fossils, 1,000 library items, 39 card files, and 4 office material items (339826).  
 Mrs. Regina Forrest: 1 fossil walrus jaw and 1 mastodon tooth (341459).  
 Julie Fortin: 15,017 insects and arthropods (341535).  
 Frank E. Fowler: 4 gems (339133).  
 Mrs. Grace Fox: 1 Japanese bridal costume (340873).  
 Dr. Marinella Franchini-Angela: see Dr. Michele Catti.  
 Dr. J. H. Frank: 329 beetles (338354, 338972, 341578).  
 Jack Frazier: 108 corals (337938).  
 Mrs. Ethel Freeman: Cutler, Estate of: 176 ethnological items (319549).  
 Dr. Herzl Friedlander: 1 carved jadeite vase (335946).  
 Michael J. Friello: 1 brown bat (341118).  
 Dr. Richard V. Gaines: 1 mineral (338826).  
 Dr. Sergio Gallo: 15 minerals (338810).  
 Professor A. Lucia Gamba and Profesor Genoveva deMahieu: 9 crustaceans (339340).  
 George R. Ganis: 27 basalts and minerals (338726).  
 Frank A. Garcia: 3 fossils (340554).  
 Cecil B. Garrett (Deceased): 19,157 insects and 178 bird skins (337651).  
 Dr. and Mrs. Lamont W. Gaston: 1 gem (338786).  
 Dr. Louis G. Gentner: 13,474 beetles (339419).  
 Ewald Gerstmann: 17 minerals (337420, 338725, 339376).  
 Lorenzo Orestes Giacomelli: 1 meteorite (339979).  
 Dr. Robert H. Gibbs, Jr.: 1,850 insects (338070).  
 Dr. Gordon G. Gibson: 5 clothing specimens (338312).  
 Mr. and Mrs. Robert F. Gill, Jr.: 2 minerals (338432).  
 Mr. and Mrs. C. Paul Gilson: 1 opal (338784).  
 Mr. and Mrs. David M. Glassman: 1 gem (338080).  
 Dr. Peter W. Glynn: 5 mollusks and 2 echinoderms (337412).  
 Dr. Robert M. Goll: 36 fossils (337327, 339960).  
 Michael Golubev: 2 lizards and 1 salamander (334147).  
 Tracy Goss: 11 calcarèous clay concretions (338331).  
 Stephen Gott: 4 gems (338673).  
 Richard Grasby: 8 minerals (340027).  
 L. P. Grey: 32 butterflies (338334).  
 Dr. James D. Grierson and Dr. Patricia Bonamo: 3 fossils (337354, exchange).  
 Dr. Ashley B. Gurney: 2,295 leafhoppers (338346).  
 Diana Gutierrez: 5 cretaceous slabs (338440).  
 Roger A. Haick: 8,431 stoneflies (338333).  
 Dr. Robert W. Hamilton: 3 weevils (340904).  
 Darelyn Handley: 86 mollusks (325027).  
 Gunnar H. Hansen: 1 mineral (338804, exchange).  
 Dr. Kazuo Harada: 2 minerals (340920, exchange).  
 M. G. (Jerry) Harasewych: 4 mollusks (339223).  
 Dr. Alan Hardy: 9 beetles (339420).  
 Jerry David Hardy: 17 mammals (338538).

Maj. Harold J. Harlan: 579 insects (338352, 341579).  
 Peter J. Harmatuk: 16,337 fossils (338624).  
 Mike Harper: 1 mineral (337450).  
 Richard V. Harrison, Esq.: 17 crustaceans (318136).  
 J. P. Hartley: 11 worms (338321).  
 Mr. and Mrs. L. G. Hasty: 1 crustacean (337330).  
 Dr. Marea Hatzios: 5 crustaceans (340025).  
 Richard Hauck: 50 minerals (336868, 337511, 340629).  
 Ken Hayes: 100 echinoderms (310855).  
 Martha Hays: 5 birds (341623).  
 Dr. Bruce W. Hayward: 3 fossils (341166).  
 John S. Hayward: 2 gems (338752).  
 Mrs. Wayne C. Hazen: 1 ruby and diamond ring (338404).  
 Dr. Jerry W. Heaps: 16 insects (338979).  
 Steve Heaton: see David Cramer.  
 Barbara Hecker: 14 echinoderms (338535).  
 Harvard K. Hecker: 1 gem (336486).  
 William Hein: 1 gem (338409).  
 Roger Heitzman: 494 moths (339423).  
 Roger L. Heitzman: 419 insects (341580).  
 W. S. Helmrich: 2 minerals (340951).  
 Dr. Gordon Hendler: 30 crustaceans (337352).  
 Edward L. Henning: 5 minerals (338636).  
 Thomas J. Henry: 53 insects (337899).  
 Dr. Jon L. Herring: 1,042 insects (338349).  
 Dr. B. Herting: 1 fly (338956).  
 Gary F. Hevel: 25,867 insects (339970, 339971).  
 Hugo Hidalgo: 2 frogs (336077).  
 Horton H. Hobbs III: 71 crustaceans (322034).  
 Mrs. Elaine R. Hodges: 1,645 insects (341583, 341596).  
 Dr. and Mrs. Ronald W. Hodges: 216 insects (341594).  
 Dr. Robert C. Hoerle: 175,650 fossils (341565).  
 Donald Hoff: 2 minerals (341255).  
 Dr. Richard L. Hoffman: 204 centipedes (341606).  
 L. Scott Hoopes: 8 gems (338718).  
 Dr. Francis M. Hueber: 2 fossils (337358, 339193); 1 mole (341116).  
 R. W. Husband: 17 insects (341235).  
 W. R. B. Hynd: 2 flies (338965).  
 Dr. and Mrs. Howard Ihrig: 4 gems (338682).  
 Yoshirhiro Ikezski: 79 flower-flies (341345, exchange).  
 Dr. Minoru Imaizumi: 2 worms (337790).  
 Dr. Peter E. Isaacson: 182 fossils (339344).  
 Mark Isaksen: 1 fossil mammoth tooth (340458).  
 Sheryl L. Ives: 7 mammals (341119).  
 Dr. Jeremy Jackson: 31 fossils (338949).  
 Jeremy F. Jacobs: 312 amphibians and reptiles (333386).  
 Dr. Maurice T. James: 4 flies (338987).  
 Alan G. Jarrett: 14 mollusks (340058).  
 Bruce C. Jayne: 31 snakes (338482).  
 Kathe Jensen: 10 mollusks (339540).  
 Dr. J. G. Johnson: 1 fossil (339148).  
 Dr. Paul Johnson: 1 mineral (338327).  
 Archie L. Jones: 65 snails (339106).  
 Duval A. Jones: 4 frog skeletons (339614).  
 Dr. Meredith L. Jones: 32 crustaceans, 1 echinoderm, 147 worms, and 35 mollusks (338088).  
 Mr. and Mrs. Robert A. Jones: 1 black pottery jar (339410).



Ken Jourdan: 16 echinoderms (326927).  
 Peter Jump: 21 moths (339965).  
 Dr. J. Just: 72 minerals (338721, exchange).  
 Dr. Kenkichi Kanmiya: 58 flies (341342, exchange).  
 Dr. Andrew E. Kasper, Jr.: 15 fossils (337357).  
 Pieter Kat: 2 mollusks (340327).  
 Dr. A. Kato: 9 minerals (339645, 340409).  
 Kenji Kawaoka: 1 gem (338640).  
 Mr. and Mrs. Mike Keck: 1 hornet-paper nest (341234).  
 Dr. Klaus Keil: 7 meteorites (339976, exchange).  
 Dr. Paul Keller: 4 minerals (337451, 339831).  
 Richard N. Kelley: 1 mineral (338773).  
 Rick Kienle: 4 Tephros (340882).  
 Chong Yiew Kim: 1 crustacean (338789).  
 C. P. Kimball: 177 insects (341577).  
 Vernon Lee Kin: 1 mineral (337934).  
 Dr. Elbert E. King: 1 meteorite (339977, exchange).  
 Vandall T. King: 1 mineral (340400).  
 Dr. Ralph F. Kirchner: 14 stoneflies (338348, 341611).  
 Howard Kirk: 2 minerals (338283).  
 Dr. D. H. Kisnter: 480 beetles (339421).  
 Dr. Donald J. Klemm: 1 worm (341099).  
 James E. Klijanowicz: 1 gem (338608).  
 Dr. and Mrs. Richard Kloecker: 2 pairs of earrings (338684).  
 James H. Kluckhohn: 1 bird skeleton (341624).  
 Dr. Eugene I. Knez: see Bruce Huges Fund.  
 Chris Knud-Hansen: 50 mollusks (340057).  
 John Kolic: 43 minerals (337500, 337501, 337502, 338742, 339377, 341060, 341502).  
 Boris Kondratieff: 2 stoneflies (341719).  
 Richard Kosnar: 1 mineral (337912).  
 Rustam Z. Kothavala: 2 minerals (338728, exchange).  
 Mrs. Alice Kraissl: 5 minerals (337512, 337935, 340230).  
 Jon M. Kramer: 1 slab of fossil ferns (337317); 3 fossil beetles (338739).  
 N. L. H. Krauss: 12 plants (337202); 5 worms, 3 mollusks, 19 crustaceans, 2 echinoderms (339961); 1,001 insects (341582).  
 Carl Krotki: 2 minerals (338675).  
 Dr. Paul R. Krutak: 38 fossils (338757).  
 Allan M. Kulakow: 69 butterflies (341232).  
 Kenji Kurihara: 30,086 fossils and rocks (337299, exchange).  
 Dr. Lawrence A. Lacey: 190 insects (338974).  
 Dr. H. S. Ladd: 220 fossils (337360).  
 Dr. D. Hille Ris Lambers: 3 insect slides (340699, exchange).  
 Austin E. Lamberts: 2 crustaceans (313808).  
 Mr. and Mrs. L. Kurt Land: 1 mineral (338679).  
 Rinus Langeveld: 27 fossil echinoids (339031, exchange).  
 Kathy Stemler Larson and Ronald J. Larson: 928 echinoderms (306358).  
 Ronald J. Larson: see Kathy Stemler Larson.  
 Thomas J. Larson: 1 bracelet (339409).  
 William Larson: 1 mineral (338244, exchange); 1 mineral (338289).  
 Dr. Douglas M. Lay: 17 mammals (340866).  
 Mrs. Roxie C. Laybourne: 1 rabbit (340368).  
 S. Howard Leblang: 1 gem (338676).  
 Forrest B. Lee: 1 mollusk (337410).  
 Dr. Harry G. Lee: 7 mollusks (337481, 340319).  
 Dr. Weldon Lee: 4 echinoderms (317627).

Wayne Leicht: 1 mineral (339109).  
 John Leslie: 1 worm, 3 mollusks, 13 crustaceans (336142).  
 Dr. A. Lewvanich: 4 lace bugs (338353).  
 Jerry Lewis: 289 crustaceans (319196, 327835).  
 John R. H. Lightbourn: 1 echinoderm (338053).  
 Robin G. Lighty: 4 corals (336914).  
 Norman and Karen Lind: 5 bamboos (337237).  
 David R. Lindberg: 100 mollusks (337608).  
 Charlene D. Long: 500 worms (337842, 341100).  
 Mrs. Marianela Brodzinsky Lopez-Penha: 1 fossil plant (341067).  
 Arthur Loveridge: 3 mammals, 11 mollusks (338408).  
 Richard S. Lovesy: fossil seal remains (340550).  
 David H. Lubetzky: 1 opal (338771).  
 Dr. F. S. Lukoschus: 2 insects (338980); 36 mite slides (341607, 341609).  
 Randall W. Lundgren: 1 insect (339418).  
 Orlando Lyman: 3 minerals (339925).  
 Jack MacDonald: 5 minerals (337919).  
 Dr. N. D. MacRae: 12 basalts (340668).  
 Irene Magyar: 1 fossil (339959).  
 Dr. Peter Major: 1,000 mollusks (334775).  
 Dr. Leo J. Malone: 25 minerals (338748).  
 Roger H. Marble: 4 minerals (336869).  
 Dr. John C. Markham: 900 crustaceans (337962).  
 Dr. Bruce A. Marshall: 4 mollusks (339672).  
 Mrs. Elsie J. Marshall: 11 mollusks (338803).  
 Dr. Joe T. Marshall: 1 bird skull (339002); 1 bird skeleton (341618).  
 Mrs. Frances E. Martin: 2 knives with sheaths (339408).  
 Jack Martin: 3 sandstone concretions (340954).  
 Maria Martinez and Family: 8 pieces of pottery (338314).  
 Dr. Brian H. Mason: 4 minerals (340437).  
 Dr. Bruce A. Masters: 14 fossils (340975).  
 Kazunosuke Masutomi: 131 minerals (337914).  
 Bryant Mather: 6 moths (338342).  
 Harold A. Mathiak: 78 clams (339671); 12 mollusks (340917).  
 Dr. Wayne N. Mathis: 1,449 shore flies (338994).  
 Melvin McClain: 2 fossils (339824).  
 Oliver McConnell: 1 sponge (338054).  
 Dr. F. J. D. McDonald: 1 stink bug (338961).  
 Mr. and Mrs. Paul McElroy: 1 basket (338315).  
 Dr. Noel McFarland: 14 moths (341229).  
 Mrs. William McGilvery: 2 fossil seal teeth (339740).  
 A. L. McGuinness: 4 minerals (340730).  
 Dr. W. W. McGuire: 61 skipper butterflies (338968).  
 Frank McKinney: 8 echinoderms (328692).  
 E. S. McSweeney: 33 crustaceans (339838).  
 Dr. James I. Mead: 1 bird (341625).  
 Paul B. Merkel: 1 gem (338610).  
 Dr. Charles Meyer, Jr.: 1 mineral (341268).  
 Dr. Harding B. Michel: 3 echinoderms, 5 crustaceans, 5 fossils (340435).  
 Dr. Julio Micheli: 1 beetle (341612).  
 Nancy Jo Miles: 12 moths (340876).  
 Dr. Steven A. Millendorf: 1 fossil (338824).  
 Mrs. Sandy Miller: 1 gem and 1 mineral (338944).  
 Dr. Walter B. Miller: 5 mollusks (336523, 341036).  
 Les R. Mintes: 13 lacewings (338338).  
 Dr. Joseph C. Mitchell: 6 salamanders (338483).

Dr. Akiho Miyashiro: 5 basalts (312134).  
 Dr. Paul Mohr: 2 minerals (334930, exchange).  
 Dr. A. Moldan: 1 crustacean (337944).  
 Dr. Harold N. Moldenke: 1 plant (340136, exchange).  
 Mr. and Mrs. W. A. Moldermaker: 1 topaz (338632).  
 Dr. Warton Monteiro: 10 mollusks (339912).  
 Donald R. Moore: 10 mollusks (339847).  
 Dr. M. Patricia Morse: 1 mollusk (338085).  
 Mr. and Mrs. Joe H. Mullins: 1 topaz (338611).  
 Mrs. John Muntyan: 33 minerals (340322).  
 Carol Matti Natella: 2 plants (336666).  
 Charles H. Nelson: 1 stonefly (339158).  
 Dr. Gayle H. Nelson: 1 beetle (338976).  
 Dr. David N. Nettleship: 28 bird skins (341615).  
 Dr. Nico Nieser: 53 true bugs (338361).  
 Dr. P. H. Nixon: 7 akremite chips (340958).  
 Dr. Bruce Nolf: 1 pumice (340884).  
 Arnold W. Norden: 106 crustaceans (323439, 336336).  
 Stuart A. Norton: 1 Polar bear skull (341117).  
 Luis A. Nunez: 1 mineral (337462).  
 Dr. Osborne B. Nye: 1,000 fossils (338616).  
 Herbert Obodda: 2 minerals (337496, 341508).  
 Dr. Charles W. O'Brien: 195 insects (341587).  
 Dr. Storrs Olson: 2 bird skeletons (341626).  
 Dr. Paul Opler: 323 butterflies (338337).  
 Dr. W. L. Overal: 16 weevils (339121).  
 Colin R. Owen: 1,268 insects and anthropods (338071, exchange); 8 crustaceans (338071); 132 insects (338360).  
 Renato Pagano: 2 minerals (338809).  
 Kay Page: 1 fossil shark tooth (338400).  
 Dr. Allison R. Palmer: 221 Trilobites (339668); 5 fossils (340974).  
 Dr. Tom Palmer: 1 mineral (341510).  
 Fred Parker: 2 minerals (337454); 24 amphibians and reptiles (339615); 1 mineral (341507).  
 Dr. Kenneth C. Parkes: 1 bird skin (336751, exchange).  
 Dr. Werner Parr: 2 minerals (339830).  
 Joanne W. Patterson: 13 caddisflies (338335).  
 Dr. Richard Pattrick: 1 mineral (339115).  
 Dr. David L. Pearson: 12 beetles (341576).  
 G. Pelizzone: 1 mineral (338727).  
 Dr. J. Pericart: 6 lace bugs (338373).  
 Mr. and Mrs. Ernest D. Perkins: 1 blackware pottery jar (339407).  
 W. R. Persons: 1 sapphire (337552).  
 Dr. Emile A. Pessagno: 24 fossils (339541).  
 Daniel J. Peters: 10 crustaceans (337516).  
 Dr. Gary L. Peters: 1 weevil (339983).  
 Tom Peters: 7 minerals (339112, 341499).  
 Richard E. Petit: 1 mollusk (336528).  
 George Pigeon: 1 mineral (339111).  
 William Pinch: 2 minerals and 9 gems (336960, 337461, 337918, 338946); 3 minerals and 1 diamond (338477, exchange); 25 gems and minerals (339024, exchange).  
 Dr. Donald J. Pletsch: 159 crustaceans (320341, 337099, 338480); 165 insects (341230).  
 Dr. I. R. Plimer: 1 mineral (340521); 79 metamorphic rocks (340671).  
 Martin Plotkin: 1 mineral (339542).



John A. Plyler, Jr.: 6 frogs (333089).  
 Dr. Robert Poole: 423 moths (341574).  
 Leroy Poorman: 2 mollusks (340009).  
 Walter Pople: 11 sponges (337508).  
 Charles W. Potter: 1 bird (341627).  
 Dr. Harry D. Pratt: 10 flower-flies (339716, exchange).  
 Robert Prezant: 12 mollusks (336853).  
 Dr. Wojciech Pulawski: 2 beetles (338969).  
 Russell A. Rahn: 1,120 insects (338960, 339964, 341238, 341683).  
 Judy B. Raynor: a fossil echinoid (338087); a fossil seal canine tooth (338625);  
     2 fossil seal toe bones (340552).  
 Mr. and Mrs. Ben S. Read, Jr.: 1 mineral (338782).  
 Dr. James Reddell: 2 insects (338341).  
 Dr. Richard L. Reeder: 7 mollusks (337325).  
 Dr. Harald A. Rehder: 1 mollusk (321133).  
 Fr. C. V. Reichart: 7 insects (341233).  
 Dr. John Reid: 1 garnet pyroxenite (340670).  
 Eric Remole: 2 crustaceans (300440).  
 Dr. Ronald N. Richmond: 2 gray pumice (339000).  
 Mrs. Viola Ricketts: 2 ash samples (340948).  
 Dr. Donald Riley: 5 amphibians and reptiles (335356).  
 Dr. S. Dillon Ripley: 1 jadeite jade (337476); 4 ethnological items (339406).  
 Dr. Saul Riesenbergs: 13 adze blades and pestles (340871).  
 Sylvia G. Roberts: 4 minerals (340733).  
 George Robertson and Debbie Santavy: 250 corals (335226).  
 Dr. A. G. Robinson: 5 insect slides (338975).  
 Dr. Richard G. Rogers, Jr.: 44 minerals (338478).  
 Dr. L. H. Rolston: 6 insects (341145).  
 Franklin R. Ross: 65 frogs (335483).  
 William H. Rowe: 871 insects (338985).  
 R. D. Rubright: 1 mineral (339922).  
 Dr. Curtis W. Sabrosky: 1,014 flies (341614).  
 Desmond Sacco: 3 minerals (337497).  
 Bryan L. Sage: 12 minerals (340523).  
 Dr. Harold St. John: 1 plant (340183).  
 Paul St. Pierre: 13 mollusks (340064).  
 Dr. Kin-ichi Sakurai: 4 minerals (341509).  
 Debbie Santavy: see George Robertson.  
 Dr. Stuart L. Santos: worms (341101).  
 Graham Saunders: 31 mollusks (338287).  
 Dr. Norman Savage: 269 fossils (338626).  
 Dr. Roy T. Sawyer: 700 leeches (339849).  
 Dr. A. G. Scarbrough: 5 scorpion flies (338357).  
 Dr. Joseph C. Schaffner: 1 insect (341586); 27 plant bugs (341601).  
 Eugene Schlepp: 4 minerals (338245, exchange).  
 Dr. Robert E. Schloesser: 1 brown algae (337189).  
 Dr. K. Schmetzer: 1 mineral (340870).  
 Dr. Justin Schmidt: 37 wasps (341720).  
 Dr. Francis J. Schmitz: 7 echinoderms (337113).  
 Vincent P. Schneider: a fossil seal toe bone and a fossil echinoid (337610); 3  
     fossil seal items (340551).  
 Richard Schooner: 64 minerals (337456, 340218).  
 Dr. George A. Schultz: 34 crustaceans (334923).  
 Edith E. Scott: 220 fossils (339192).  
 Abel J. Selburn: 20 minerals (340524).  
 Raymond D. Semlitsch: 16 salamander larvae (340587).

Frank T. Sesock: 2 plants (338902, 340167).  
 William Severance: 1 mineral (340323).  
 Dr. A. J. Shelley: 10 blackflies (338954).  
 J. W. Short: 1 fern (336647).  
 Charles B. Shorter: 20 ethnological items (339416).  
 Scott Silsby: 1 mineral (338363).  
 Dr. Sunthorn Sirivanakarn: 14 insects (340879).  
 Mr. and Mrs. Edward J. Slattery: 1 ruby and diamond ring (338720).  
 David Smith: 2 minerals (335388).  
 Mr. and Mrs. David S. Smith: 1 gem (338406).  
 F. L. Smith: 1 mineral (337913); 10 minerals (340615, exchange).  
 Frank Smith: 100 echinoderms (338947).  
 Dr. James Keith Smith: 240 fossils (340482).  
 Dr. Annette R. Sopton: flies (338991).  
 Richard C. Sorlien: an undivided one-half interest in gold (338758).  
 Walter G. Sorrell: 1 bat (341120).  
 Dr. Paul J. Spangler: 131 insects (341241); 2,341 water beetles (341589).  
 Dr. Jon Standing: 10 crustaceans (340317).  
 Dr. Ferdinand Starmuehlner: 1 sponge (338534).  
 Norman H. Stavisky: 1 gem (338754).  
 David Steadman: 53 bird skeletons (341243, 341628).  
 Warren Steiner: 20 insects (338971).  
 Warren E. Steiner: 130 insects (338332).  
 Dr. and Mrs. David Steinhardt: 1 carved nineteenth-century white jadeite bowl (334526).  
 Linda E. Stemmler: 2 turtle skeletons (338063).  
 Piet Stemvers: 3 petrology and volcanology specimens (339425).  
 Dr. Franz Stenzel: 1 canoe model, toggle harpoon line and basketry hat (339399).  
 Dr. N. C. N. Stephenson: 6 minerals (338247).  
 Wolfgang Sterrer: 2 echinoderms (336531).  
 John Stewart: 7 minerals (337424).  
 Suzanne Stewart: 1 scorpion (341608).  
 Dr. Wendell J. Stewart: 14 fossil slides (337565).  
 Dr. Jay D. Stone: 5 lace bugs (340878).  
 Dr. M. J. Storey: 2 minerals (340555, exchange).  
 Professor Maurice Streel and Dr. Muriel Fairon-Demaret: 2 fossils (337362, exchange).  
 Robert Svecz: 62 minerals (337422, 337484, 337933, 338729, 339348, 341059).  
 Bernard G. Swegman: 1,251 insects (341610); see also William P. Coffman.  
 Clyde Swindell: 70 fossil bones (337378, 339100); 14 fossil birds and seals (340061).  
 John Sylvester, Jr.: 1 bamboo "Jew's harp" (339405).  
 Dr. J. L. Talbot: 11 lavas (340380).  
 Dr. Dwight W. Taylor: 18 fossils (340008, 340288).  
 Harold M. Taylor: 51 minerals (338278, 338672, 339547, 341288).  
 Dr. Curt Teichert: 3 fossils (339881).  
 Dr. Harry A. Ten Hove: 10 worms (337312).  
 Dr. David J. Tepper: 3 minerals (337936).  
 Dr. Leon Termin: 1 emerald (338806).  
 Donald B. Thomas: 3 insects (341585, 341721).  
 Dr. Richard W. Thorington, Jr.: 29 mammals (333407); 300 mollusks (339923); 176 spiders (341722).  
 Dr. Stephen G. Tilley: 651 salamanders (340236).  
 Jean Trondle: 505 mollusks (337942).  
 Dr. Walter R. Tschinkel: 25 insect larvae (341231).  
 Dr. D. Tuni: pumice samples (339981).

Dr. Ruth Turner: 4 mollusks (340556).  
 Dr. Robert H. Turnbow, Jr.: 2 insects (340877).  
 Mr. and Mrs. Milton Turner: 4 Ch'ing mineral carvings (337379); a three  
 figured jade carving and a gold and jade pendant (333092).  
 Lowell D. Uhler: 38 rodents (334692).  
 Dr. Ing. C. van Achterberg: 2 insects (338375).  
 Richard F. Van Cuyck: 1 mineral (338774).  
 C. van Nidek: 3 insects (339966).  
 Brad Van Sriver: 4 minerals (341263, exchange).  
 Nadia Venedictoff: 5 butterflies (341718).  
 William T. Vickers: 78 potsherds, potrests, and a stone ax head (338307).  
 Dr. Emily H. Vokes: 108 fossils (338763, 338836).  
 Dr. Gilbert Voss: 1 echinoderm (340321).  
 Robert K. Waldron: 2 minerals (340610, exchange).  
 Dr. Francis S. Walker: 178 minerals (338759).  
 Don Ward: 1 fossil seal jaw (340553).  
 Lady Ward: 1 fossil brittle star (340501).  
 Bernard Wasley: 4 gems (336381).  
 Dr. Douglas T. Watanabe: 49 minerals (338749).  
 Peter B. Waters: 1 gem (339648).  
 R. Preston Watts: 9 fossils (339045).  
 Mrs. Charles H. Weber, Jr.: 3 minerals (340410).  
 Mrs. Harriet H. Weller: 8 mollusks (340214).  
 Dr. G. M. Wellington: 1 starfish (336334).  
 Dr. John Wells: 4 echinoderms (340369).  
 Dr. Christen M. Wemmer: 2 sloth bears (341220).  
 Robert F. Wenzel: 1 gem (338635).  
 James Westgate: 12 fossils (339827).  
 Dr. G. C. Wheeler: 12 beetles (338563).  
 Quentin D. Wheeler: 17 beetles (341604).  
 Dr. Donald Whitehead: 176 beetles (341228).  
 Thomas E. Whiteley: 44 insects (338650).  
 W. Wiezlak: 216 insects (338355, exchange).  
 Dr. D. Dee Wilder: 1,352 flies (341715).  
 Dr. Martin Wiley: 237 crustaceans (333507).  
 Leonard J. Wilkinson: 438 minerals (331796).  
 Dr. James D. Williams: 21 mollusks (339673).  
 Dr. Larry David Wilson: 5 frogs (338543).  
 Horst Windisch: 1 mineral (337421).  
 Charles Winters: 10 minerals (340630).  
 Charles P. Withrow: 4 insects (338977).  
 Edgar A. Womble, Jr.: 1 fossil seal (338402).  
 Russ Wood: 1 fossil (340062).  
 Bryan Woodard: 2 crustaceans (337095, 338281).  
 Kirk Woods-Denkler: 150 mollusks (337344).  
 Jim Woolley: 50 wasps (338993).  
 Cal Yorke: 25 frogs (339921).  
 Dr. Frank N. Young: 294 beetles (341592).  
 Jack Young: 1 mineral (339761).  
 Orrey P. Young: 342 beetles (339972).  
 Dr. Norman W. Youngsteadt: 6 crustaceans (340692).  
 Victor Yount: 11 minerals (339110).  
 Dr. Yu: 1 Korean silk banner (339403).  
 Frank G. Zalom: 90 beetles (338359).  
 D. H. Zibrowius: 10 echinoderms and 1 crustacean (339248).  
 Dr. William J. Zinsmeister: 128 fossils (337326, 339378).  
 Mr. and Mrs. Julius Zweibel: 2 minerals (337483).



## NATIONAL ZOOLOGICAL PARK

### *Donors of Financial Support*

Ms. Nancy Beebe  
Mr. Rodion Cantacuzene  
Mrs. Caroline A. Hassan  
Mr. and Mrs. Bruce Lovelett  
Mortar Board Alumnae Association  
of Washington, D.C.

Miss Cathy Schreiner and friends  
Mrs. Halbert M. Sloat  
Mr. Kenhelm W. Stott  
Miss Helen R. Thompson  
Ms. Shirley E. Walker

### *Grants*

Eugene and Agnes Meyer Foundation  
Friends of the National Zoo<sup>1</sup>

National Geographic Society  
National Institute of Mental Health

## SMITHSONIAN TROPICAL RESEARCH INSTITUTE

### *Donors of Financial Support*

Atherton Seidell Endowment Fund  
EXXON Corporation  
Henry B. and Grace Doherty  
Foundation

James Smithson Society  
The Nature Conservancy  
Rare Animal Relief Effort

### *Restricted Trust Fund Donor*

Tupper Foundation

## HISTORY AND ART

### ARCHIVES OF AMERICAN ART

#### *Donors of Financial Support*

##### \$10,000 AND ABOVE

The Adolph Foundation  
Mr. and Mrs. Gilbert H. Kinney  
Mr. Richard H. Manoogian

##### \$5,000 AND ABOVE

Mrs. William L. Richards

The L. J. Skaggs Foundation

##### \$1,000 AND ABOVE

Anonymous  
The Bundy Foundation  
Mr. John B. Coleman  
Mrs. Lucile Daum  
Mrs. Albert DeSalle  
Mr. and Mrs. Saul Dunitz  
Mr. and Mrs. Joel S. Ehrenkranz  
Mr. Edwin Firestone  
Walter and Josephine Ford Fund  
Dr. and Mrs. Henry Foster  
Garfinckel, Brooks Brothers,  
Miller & Rhoads, Inc.  
Mr. and Mrs. Joseph Hirshhorn  
Mr. and Mrs. Herbert Hoover  
Mrs. Dorothy Johnson  
La Boucherie Bernard Ltd.

Mr. and Mrs. Howard Lipman  
Mr. and Mrs. William A. Marsteller  
Dr. and Mrs. Abraham Melamed  
Mr. and Mrs. William Mitchell  
Mr. and Mrs. Dan Oppenheimer  
Mr. and Mrs. Hall J. Peterson  
Mrs. Albrecht Saalfeld  
Mrs. Robert F. Shapiro  
Mr. and Mrs. Frederick A. Sharf  
Mrs. Otto L. Spaeth  
Mr. A. Alfred Taubman  
Nina W. Werblow Charitable Trust  
The Wyeth Endowment for  
American Art  
Woodward and Lothrop

---

<sup>1</sup> These funds were earned by Friends of the National Zoo, according to their provision of public service under contract to the Smithsonian Institution.

\$500 AND ABOVE

Anonymous  
Anonymous  
Mrs. James H. Beal  
Mrs. Ann W. Brewer  
Mr. and Mrs. Saul Z. Cohen  
William and Martha Ford Fund  
Mrs. James L. Goodwin  
Mrs. Margaret C. Guillard  
Mrs. Alfred C. Harrison

John and Ella Imerman Foundation  
Mrs. Lucille McIntyre Jewett  
Mrs. Annaline Levi  
Miss Alice L. Norris  
Mrs. Harris Oppenheimer  
Mr. and Mrs. Thomas L. Schoenith  
Mrs. Mary-Leigh Smart  
Mrs. Claire A. Williams

\$100 AND ABOVE

Mr. Hale R. Allen  
Mr. Arthur Altschul  
Mrs. Ecetra Nippert Ames  
Mr. and Mrs. J. Denton Anderson  
Mr. Wendell W. Anderson  
Mr. and Mrs. Jerome Ash  
Ms. Edith M. Aufiero  
Mr. and Mrs. Philip H. Augerson  
Mr. and Mrs. Louis C. Baker  
Mr. Richard Brown Baker  
Mr. W. N. Banks  
Mrs. Joseph Baumgold  
Mr. and Mrs. Bernhard G. Bechhoefer  
Dr. and Mrs. James Stephen Benedict  
Mrs. James A. Beresford  
Mr. and Mrs. Philip J. Berman  
Mrs. Anna H. Bing  
Mr. and Mrs. Theodore D. Birnkrant  
Mrs. Emil Bisttram  
Mr. and Mrs. H. Glenn Bixby  
Mr. and Mrs. Alan Blinken  
Mr. Paul Borman  
Mr. R. Wallace Bowman  
Mr. and Mrs. John L. Bradley  
Dr. and Mrs. William J. Briggs  
Mrs. David R. C. Brown  
Mrs. George R. Brown  
Mr. J. Lawrence Buell, Jr.  
Mr. and Mrs. John Lee Bunce  
Business Automation  
Chapellier Galleries  
Mr. and Mrs. Charles D. Clark  
Mrs. James H. Clement  
Mrs. Janet H. Coors  
Mr. Gardner Cowles  
Dr. and Mrs. Burnill Crohn  
Mrs. Susan L. Cullman  
Miss Ruth Cumming  
Mrs. Chester Dale  
Mr. and Mrs. Weiner Dannheisser  
Mr. and Mrs. Richard Danziger  
Mrs. Mary Mallery Davis  
Mrs. Elizabeth DeCuevas

Ms. Lois M. DeDomenico  
Mrs. Gladys Kriebel Delmas  
Mr. Robert L. Dewar  
Mr. Martin Diamond  
Mr. C. Douglas Dillon  
Mr. and Mrs. Herbert Doan  
Mrs. Amy Dobronyi  
Mr. and Mrs. Richard P. Doerer  
Mrs. John C. Dorn  
Mr. and Mrs. George C. Dyer  
DuMouchelle Art Gallerie  
Mr. Gerald S. Elliott  
Elsmere Foundation, Inc.  
Mrs. Allan D. Emil  
Mr. Arthur D. Emil  
Mr. and Mrs. George Endicott  
Jimmy and Dallas Ernst  
Mrs. James Espy  
Mr. Bayard Ewing  
Ms. Sherry Evans  
Fairweather-Hardin Gallery  
Mr. and Mrs. Burton Farbman  
Mrs. Rodman Fay  
Mr. and Mrs. Porter Fearey  
Fischbach Gallery  
Mr. and Mrs. Donald G. Fisher  
Mr. and Mrs. Walter W. Fisher  
The Janet and Mortimer Fleishhacker  
Foundation  
Mr. and Mrs. Daniel Fraad  
Mr. and Mrs. Ivan Frankel  
Mr. and Mrs. Marshall M.  
Fredericks  
Mrs. Frank Freed  
Mrs. John S. French  
Mr. and Mrs. B. H. Friedman  
Mr. Glenn H. Friedt, Jr.  
Miss Elizabeth H. Fuller  
G & D Communications Corp.  
Mr. and Mrs. Kennedy B. Galpin  
Mr. and Mrs. Gordon P. Getty  
Mrs. Charles Gilman  
Mr. and Mrs. Stanley Glen

Mr. and Mrs. Seth M. Glickenhau	Dr. and Mrs. Michael Lapadula
Mrs. Ralph Goldenberg	Mrs. Rodney Layton
Mr. and Mrs. Abner Goldstone	Mrs. Rensselaer W. Lee
Mr. Alan L. Gornick	Mr. and Mrs. Jacob Lehrman
Mr. and Mrs. Frederic J. Graber	Dr. and Mrs. Irving H. Leopald
Mr. Charles M. Grace	Mrs. Janice H. Levin
The Gramercy Park Foundation	Mrs. Leonard Levine
Mrs. B. Thomas Green	Mrs. Stanley K. Levison
Dr. and Mrs. Frank Greene	Mr. and Mrs. Sidney Lewis
Mr. and Mrs. Lester Gruber	Dr. Marjorie Lewisohn
Mrs. Franz Grunbaum	Mr. and Mrs. Karl A. Limbach
Mr. and Mrs. Melville Hall	Mr. Lars Eric Lindblad
Mr. Robert H. Halff	Mr. and Mrs. Bernard Linden
Mr. Joseph Hardy	Mr. Howard F. Linder
Mr. and Mrs. E. Jan Hartmann	Mrs. Arthur M. Long
Mrs. Anita V. Hiller	Mr. Meredith Long
Mr. and Mrs. Clarence Hoiles	Mr. and Mrs. Harold O. Love
The David Hokin Foundation	Mrs. Madeleine M. Low
Mrs. Grace Garden Hooker	Mr. Earle Ludgin
Mr. Stephen Horn II	Mr. and Mrs. Russell Lynes
Mr. and Mrs. Raymond J. Horowitz	Mr. David Hunter McAlpin
Mrs. J. Stewart Hudson	Mr. Porter A. McCray
Mr. Frederick G. L. Huetwell	Mrs. Eugene McDermott
Mr. and Mrs. A. D. Hulings	Mr. and Mrs. John D. Mack
Mrs. William M. Hume	Mr. James T. McKay
Mr. and Mrs. James Humphry III	Mrs. Hiram McKee
Miss Milka Iconomoff	Mr. and Mrs. Robert L. McNeil, Jr.
International Business Machines Corp.	Mrs. Elizabeth H. Maddux
Mr. and Mrs. Lewis Iselin	Magonan Family Foundation
Mrs. Harrison Ivancovich	Mr. and Mrs. Richard Manney
Mr. and Mrs. Herbert H. Jacob	Mrs. Edward Marcus
Dr. and Mrs. David Jacknow	Robert and Betty Marcus
Mr. and Mrs. Henry Johnson	Foundation, Inc.
Mrs. Ruth Carter Johnson	Mr. and Mrs. P. J. Maveety
Mr. and Mrs. A. W. Jones	Mr. and Mrs. Louis K. Meisel
Mrs. Virginia W. Kampf	Mrs. Anna K. Meredith
Mr. and Mrs. Jacob Kaplan	Mr. and Mrs. John F. Merriam
Mr. Sidney S. Kaplan	Drs. Paul and Laura Mesaros
The Landsman and Katz Foundation	Mrs. Barbara B. Millhouse
Mr. and Mrs. Sidney Katzman	Mr. and Mrs. Irving J. Minett
Mrs. Jean R. Kelley	Mr. and Mrs. A. Minowitz
Mrs. R. L. Kemper	Mrs. Carleton Mitchell
Mr. and Mrs. Dwight M. Kendall	Dr. and Mrs. Coleman Mopper
Kennedy Galleries	Mr. Raymond D. Nasher
Mrs. Charles Kessler	Mr. and Mrs. Walter A. Netosh
Mrs. David L. Klein	Mr. and Mrs. Roy R. Neuberger
Mr. John Klingenstein	New Hermes Foundation
Mr. and Mrs. Robert P. Kogod	Mrs. Annalee Newman
Mrs. Barbara Krakow	Mr. John C. Nicholls
Mr. Nate Krause	Mr. and Mrs. Paul Nine
Mr. Peter Kriendler	Mrs. Dorothy Norman
Mrs. Roger M. Kyes	Mr. and Mrs. Samuel Orosnik
The Lachaise Foundation	Mr. Edward H. Osgood
Mrs. Richard E. Lang	Mr. Alfonso Ossorio
Dr. William A. Lang	Mrs. Leonard Oster
Mr. Modesto Lanzone	Mr. L. Vere Peter Page



Mrs. E. Bliss Parkinson  
 Mrs. Henry Pearlman  
 Mr. Charles R. Penney  
 Perles Galleries  
 Mrs. Donald A. Petrie  
 Mr. Gifford Phillips  
 Mr. and Mrs. Laughlin Phillips  
 Mrs. Herbert Polacheck  
 Mr. and Mrs. Leon B. Polsky  
 Mr. and Mrs. William J. Poplack  
 Mr. and Mrs. M. P. Potamkin  
 Col. and Mrs. Kai Rasmussen  
 Mrs. Dorothy H. Rautbord  
 Mrs. Dana M. Raymond  
 Mrs. Michael M. Rea  
 Mr. Raphael Recanati  
 Mr. and Mrs. Edgar P. Richardson  
 Mr. and Mrs. Chapin Riley  
 Drs. Ulrich O. and Barbara Ringwald  
 Mr. David Rockefeller  
 Mrs. John D. Rockefeller  
 Rogoco Foundation  
 Mrs. Ednah Root  
 Mr. Robert P. Rosenberg  
 Mrs. Alan H. Rosenthal  
 Mrs. Joseph Rubin  
 Mr. and Mrs. Harry Rubin  
 Mrs. Madeleine H. Russell  
 Mrs. Ann McGovern Scheiner  
 Mr. and Mrs. Walter Scheuer  
 Mr. and Mrs. Abbott K. Schlain  
 Mr. and Mrs. Allan B. Schmier  
 Mr. and Mrs. Douglas A. Schubot  
 Mrs. Gertrude Schweitzer  
 Ms. Sarita Seid  
 Mr. and Mrs. Carl Selden  
 Mr. Stephen Shalom  
 Mr. and Mrs. Alger Shelden  
 Mrs. Harvey S. Sherber  
 Mrs. Charles P. Slater  
 George M. and Mabel H. Slocum  
 Foundation  
 Mrs. J. Scott Smart  
 Mrs. Lawrence C. Smith

Mrs. Elizabeth C. Snyder  
 Mr. and Mrs. Maury L. Spanier  
 Mr. Ira Spanierman  
 Mr. and Mrs. Ernest Spear  
 Mrs. Girard Spencer  
 Mr. and Mrs. Mark C. Stevens  
 Mr. and Mrs. S. Sidney Stoneman  
 Mr. and Mrs. Bayard Storey  
 Mrs. Philip Straus  
 Mr. and Mrs. Robert D. Straus  
 Mr. Emanuel M. Sulkes  
 Mr. and Mrs. Albert Susman  
 Mr. Jack Greer Taylor  
 Mr. Eugene V. Thaw  
 Mrs. Rose Tishman  
 Mrs. William C. Tost  
 Mr. and Mrs. Lynn A. Townsend  
 Mr. and Mrs. Raymond S. Troubh  
 Mrs. Hooper Truettner  
 Mr. and Mrs. W. Anthony Ullman  
 Mrs. Helen J. Urban  
 Miss Berta Walker  
 Mr. C. Carter Walker, Jr.  
 Mrs. Hudson D. Walker  
 Ms. Suzanne Walker  
 Mr. Edward M. M. Warburg  
 Mrs. Alan Washburn  
 Mrs. W. C. Ward  
 Mr. and Mrs. Alvin Wasserman  
 Mrs. Paul L. Wattis  
 Mr. and Mrs. Joseph Weinstein  
 Mrs. Elaine G. Weitzen  
 Mr. Michael A. Wertheimer  
 Mr. and Mrs. Victor Wertz  
 Mr. and Mrs. Jerome Westheimer  
 Mr. and Mrs. R. J. Williams  
 Mr. and Mrs. Clarence J. Woodward  
 Mr. and Mrs. Warren R. Woodward  
 Mr. and Mrs. LeRoy H. Wulfmeier  
 Mrs. Melvin C. Yocum  
 Mrs. Roslyn D. Young  
 Mr. and Mrs. William J. Young, Jr.  
 Mrs. Guri Lee Zeckendorf  
 Mr. A. Robert Zeff

#### COOPER-HEWITT MUSEUM

##### *Donors of Financial Support*

*\$10,000 and above*

Stephen Brener  
 Helen Buckner  
 Janet Annenberg Hooker  
 J. M. Kaplan Fund

Karen J. Keland  
 New York State Council on the Arts  
 Arthur Ross Foundation  
 Estate of D. Lorraine Yerkes

*\$1,000 and above*

The Anaconda Company  
Louis W. Bowen  
The Bristol-Myers Fund  
Brunschwig & Fils, Inc.  
Conde-Nast Publications  
Consolidated Edison of New York  
Copper Development Association  
Corning Glass  
Mr. and Mrs. John A. Corroon  
Priscilla Cunningham  
Mrs. Gordon P. Getty  
Gilman Paper Company  
Harcourt Brace Jovanovich, Inc.  
August Heckscher  
Mrs. Sally Faile Jeançon  
Mr. and Mrs. Robert Heilbrunn  
Johnson & Higgins  
Johnson, Matthey Inc.  
Andrea K. Keland  
Karen H. Keland

Frederick R. Koch  
Lee/Jofa  
Lenox, Inc.  
Mrs. Jack Linsky  
Mrs. Phyllis Massar  
Mrs. Elizabeth R. McIntosh  
Phelps-Dodge Company  
Scalamandré  
Stavropoulos Corporation  
Joseph E. Seagrams and Sons  
Steelcase, Inc.  
Sterling Silversmiths Guild  
of America  
Skidmore, Owings & Merrill  
Florence Louchheim Stol Foundation  
Vice Versa  
Wallcovering Information Bureau  
Ralph J. Weiler Foundation  
John Wiley & Sons, Inc.  
Workbench, Inc.

*\$500 and above*

Mr. Paul P. Accetta  
Mr. and Mrs. Frederick Adler  
Amicus Foundation  
Mr. and Mrs. Thomas S. Brush  
Anne S. Dayton  
Mrs. Joanne DuPont  
The Henfield Foundation  
Deborah S. Mandeville

Ms. Elinor Merrell  
Mrs. Janos Scholz  
Stroheim & Romann  
Exhibition Sponsors  
Intercoiffure America  
Philip Morris, Inc.  
Xerox Corporation

*Gifts of Objects and Donors to the Collection*

A total of 3,295 objects were given by 92 donors during the period October 1, 1979, through September 31, 1980. Among the most important are the following:

- Mr. Thomas Carnese: signed Louis Comfort Tiffany "Agate" vase, late nineteenth century.  
Mr. Edward Lee Cave: the complete contents of a research library of decorative arts.  
Mr. and Mrs. John Corroon: an early nineteenth-century American three-mold blown pitcher.  
Priscilla Cunningham: a lithograph by Michael Knigin, *53 Stations of the Tokaido*.  
Mr. Frank Haines: 12 puppets from *The Chinese Nightingale* and *Martin Chuzzlewit*.  
Mrs. Norris W. Harkness: a six-piece sterling silver tea and coffee service made by Bailey, Banks and Biddle of Philadelphia, c. 1888.  
S. C. Johnson & Son, Inc.: a knitted hanging by Mary Walker Phillips, *Near East No. 2*.  
Mr. Roger Kennedy: a seven-piece place setting of China designed by Frank Lloyd Wright for the Imperial Hotel, Tokyo, Japan; 3 Louis Sullivan door plates and knobs, late nineteenth-century metalwork.

Knoll International: a print by Robert Venturi, *Knoll Center Ceiling Design*.  
 Mrs. Orin Lehman: the collection of eighteenth-century French, German, and English porcelains.  
 Mrs. Albert A. List: an etching by Robert Conover, *Collapse of Erie Pier 48*.  
 Mr. Joseph McCrindle: 6 drawings—1 Bolognese seventeenth-century ceiling design, 3 French nineteenth-century designs for Sèvres plates, 1 French nineteenth-century Apotheosis of Marie Antoinette, 1 French eighteenth-century book illustration—3 French eighteenth-century prints after Boichengrain; 1 nineteenth-century silver-plated plaque.  
 Marimekko, Inc.: a collection of fabrics produced by Marimekko.  
 Florence Montgomery: roller-printed cotton from England, early nineteenth century.  
 Mrs. Jefferson Patterson: side chair signed by Gallé, French, late nineteenth century.  
 Elizabeth Riley: an etching by John Taylor Arms, *Church of Notre Dame, Villefranche*; a lithograph by Clare Romano, *Construction*; a cardboard relief print by John Ross, *Duomo II*; a collography by John Ross, *Slovene Farm*; needlepoint designed by Jean Lurcat in 1928.  
 Mrs. Kit Robins: a rare seventeenth-century tortoise-shell comb with case.  
 Werner Schmidt: an etching by Carlfriedrich Claus; a poster by Claus, *Exhibition at the Clara Mosch Galerie*; 3 posters from three exhibitions at the Dresden Kupferstichkabinet.  
 Mr. and Mrs. Janos Scholz: a marble and gilt bronze pedestal clock, figure signed by Carrier-Belleuse.  
 Jean-Pierre Seguin: 2 early-nineteenth-century French playing cards.  
 Mrs. Celia Siegel: an Art Deco lamp by Bouraine; an onyx clock by Preiss.

## FREER GALLERY OF ART

### *Donors of Financial Support*

Mr. and Mrs. Willard G. Clark	The Japan Foundation, New York
Mary Livingston Griggs and	Princeton Club of Washington
Mary Griggs Burke Foundation	Mr. Hobart Taylor
The Japan Foundation, Tokyo, Japan	

### *Donors to the Freer Collection*

Mrs. Samuel D. Berger and Graenum	Mr. Seiichi Honde
and Emma Berger, in memory of	Mrs. Eleanor F. Lenzner
Ambassador Samuel D. Berger	Mrs. Mildred F. Loew
Estate of Mrs. Margaret Garber Blue	Mr. and Mrs. Max R. Oberdorfer
Mr. Myron S. Falk, Jr.	The Honorable and Mrs. Hugh Scott
Mr. J. D. Hatch, in memory	Mr. John S. Thacher
of William R. B. Acker	Mr. Tung Tso-pin
Mr. Province Henry	Mr. C. C. Wang

### *Donors to the Study Collection*

Academia Sinica	Mr. Zachary Taylor
Mrs. Myron B. Smith	Mrs. S. L. Tesone

### *Donors to the Library*

The Japan Foundation, Tokyo, Japan	Metropolitan Study Center for Asian
Mr. Murray Lebwohl	Art
	Ellen Bayard Weedon Foundation



HIRSHHORN MUSEUM AND SCULPTURE GARDEN

*Donors of Financial Support*

GENERAL CONTRIBUTORS

Richard B. and Peter L. Bermont  
Edward R. Downe, Jr.  
Marvin Korengold

Penn Lupovich, M.D.  
Tom & Barnt, Ltd.  
Washington Art League

HIRSHHORN HOLIDAY ACTIVITY GRANT

Women's Committee of the Smithsonian Associates

MATCHING ACQUISITION FUND CONTRIBUTION

Leigh Block

*Donors to the Collections*

Anonymous  
Dr. C. Andrew L. Bassett  
Mrs. Nathaly Baum  
Robert Alan Brown  
Mildred Constantine  
Seth and Gertrude Dennis  
Julio de Dilgo  
Joseph M. Erdelac  
Joseph H. Hirshhorn  
Mr. and Mrs. Joseph H. Hirshhorn  
Mrs. Catherine Hohenlohe Jacobus  
Mrs. Yashuo Kumijoshi

Carl Lobell  
James McGarrell  
Alice Neil  
Kenneth Noland  
S. Dillon Ripley  
Larry Rivers  
Michael Todd  
Mr. and Mrs. Alan L. Shulman  
Raphael and Rebecca Soyer  
James Younger  
Mr. and Mrs. Maurice Vanderwoude  
Dr. and Mrs. Hyman Weitzen

JOSEPH HENRY PAPERS

*Donors of Financial Support*

Peter C. Cornell Trust

National Academy of Sciences

MUSEUM OF AFRICAN ART

*Donors of Financial Support*

\$10,000 AND ABOVE

Atlantic Richfield Foundation

\$1,000 AND ABOVE

Exxon Corporation  
Embassy of Kenya  
Phelps Stokes Fund

\$500 AND ABOVE

Chesapeake and Potomac Telephone Company  
Hechinger Foundation

\$100 AND ABOVE

Ace Editions  
Dr. and Mrs. Lewis Atkinson  
Dorothy Anderson  
Mr. David L. Anderson  
William Barrett  
Mrs. Helen M. Blackburn

Standish Brooks  
Ben H. Brown  
Leon Brown  
Alfred E. Bryan  
John Buck  
T. Robert Burke

J. L. and Alice Clark  
 Flournay A. Coles  
 Dr. and Mrs. Paul B. Cornely  
 Mary P. Daugherty  
 Ann Ford Doyle  
 Carolyn El-Amin  
 Robert Elkin  
 John L. Ellicott  
 Gladys L. Fishel  
 Harold C. Fleming  
 Mrs. Nancy M. Folger  
 Carl M. Freeman  
 Kenneth A. Freeman  
 Hinda K. Freye  
 John A. Friede  
 J. David Gaines  
 Marvin Gerstin  
 Vernon Gill  
 James Gilliam  
 Goldberg/Marchesano  
 Elizabeth Guest  
 Gordon Hanes  
 Nancy Hanks  
 Stephen and Judith Hanna  
 Joseph H. Hirshhorn  
 Edwin E. Hokin  
 Sylvia C. Hurston  
 International Minerals and Chemical  
 Corp.  
 M. S. and I. S. Isaacs, for Jean  
 Herskovits  
 A. W. Jessup  
 Harold Johnson  
 Nancy Keiser  
 Mr. and Mrs. Gilbert Kinney  
 Clinton E. Knox

*Donors to the Collection*

Joseph Agostinelli  
 Anonymous  
 Anonymous  
 Armand Arman  
 Judith W. Ashelman  
 William Brill  
 The Hon. and Mrs. W. Beverly  
 Carter, Jr.  
 Robert Culbertson  
 Rick Davis  
 Dr. Norbert Fleisig  
 H. Alan and Melvin Frank  
 Dr. Sylvia Frank  
 Glenn and Alexandra Garrison  
 Mr. and Mrs. Chaim Gross  
 John A. Hofheins  
 Bryce Holcombe  
 J & R Investments

Scott Lang  
 The Links  
 Harry H. Lunn  
 Mr. and Mrs. Robert Marcus  
 Mrs. Robert B. Mayer  
 George C. McGhee  
 G. William Miller  
 Dr. Ted Miller  
 James B. Mitchell  
 John U. Nef  
 Robert Nooter  
 C. Donald Parker  
 Delilah Pierce  
 Joseph Pierce  
 Lee and Kathy Price  
 Barbara Reich  
 Robert Reich  
 Fred M. Richman  
 Hans A. Ries  
 Morton L. Salan  
 Thorndike Saville  
 James H. Scheuer  
 Gustava Schindler  
 Robert Shackleton  
 Anne Shultz  
 Ruth J. Smith  
 Lael and Ron Stegall  
 John Thacher  
 Julia M. Timberlake  
 Pattie B. Tyson  
 Preston Valien  
 Robert Gill Walker  
 Jack A. Wilson  
 Jack and Angene Wilson  
 Mildred R. Winer

J. Wesley Johnson  
 Harvey Golden  
 Eliot and Rhoda Liffland  
 Mr. and Mrs. Martin J. Livingston  
 The Hon. and Mrs. Robinson  
 McIlvaine  
 Robert and Nancy Nooter  
 The Hon. Thomas P. O'Neill  
 Alan M. Gilstein and William J.  
 Piccerelli  
 Thomas Quimby  
 Warren Robbins  
 Dr. Francis Scola  
 The Hon. Anthony M. Solomon  
 Mrs. E. W. Tompkins  
 Mr. and Mrs. Burton Tremaine  
 Benjamin Weiss  
 Dr. Nicholas Zervas

## NATIONAL COLLECTION OF FINE ARTS

### *Donors of Financial Support*

Art Lovers League  
Belgian American Educational  
Foundation, Inc.  
Mary Z. Bryant  
Cafritz Foundation  
Evelyn Clar  
Rebecca R. Clar  
Paul M. Crerar  
Paul W. Doll  
Sue A. Draves  
Preston Green  
R. Philip Hanes, Jr.  
Mary E. Hauptmann  
I.B.M. Corporation

Sheila Isham  
Mrs. Jacob Kainen  
Mrs. Margaret D. McKee  
National Capitol Glass  
Dr. Frederick Offenberger  
Philip J. Rowley  
Charles H. Sawyer  
Ross Scott  
Pamela B. Shafer  
Rosalind Sheldon  
Iola B. Springer  
United Technologies Corporation  
Mrs. Robert D. Van Roijen  
Harry W. Zichterman

### *Donors to the Collections*

Anonymous  
Anonymous  
Mrs. John A. Benton  
Dr. and Mrs. George P. Blundell  
Mrs. Fannie Brenner  
Mrs. Adelyn D. Breeskin  
Mrs. John Crosby Brown  
Dr. and Mrs. Jerome Canter  
Richard C. Childers and Nancy M.  
Childers  
Mrs. B. S. Cole  
Howard N. Cook  
Josephine and Salvatore Del Deo  
Joan and Miriam DeWitt  
Olin Dows  
Isabelle Collin Dufresne  
Robert S. Fastov  
Mr. and Mrs. Daniel Fendrick  
Mrs. Mary Jane Fisher  
Mrs. Gertrude C. Frey  
Howard and Shirlee Friedenberg  
Galerie Triangle  
General Services Administration  
(transfer from)  
Mr. John R. Grabach  
Arthur and Anne Granick  
Preston Greene  
Dr. and Mrs. Carolyn Halpert  
Richard Hamwi  
National Museum of History and  
Technology (transfer from)  
Mr. John A. Hoffar  
H. Lawrence Holcomb  
Mr. and Mrs. Wallace F. Holladay  
Gordon Holler  
William Page Howell  
Billy Morrow Jackson

S. C. Johnson and Son, Inc.  
Jacob Kainen  
Mr. and Mrs. Jacob Kainen  
Mrs. Martha R. Kantor  
Edith B. Katz  
Louis and Annette Kaufman  
Mrs. Charlene Baumert Kell  
Peter Krasnow  
Michael Lantz  
Keith LaPointe  
Estate of Louis B. Letterine, Jr.,  
through Mrs. Lynn Letterine  
Adele Lozowick  
Frank McClure (bequest of)  
Mrs. Hiram W. McKee  
Mrs. William M. Mann  
Felicia Myeer Marsh  
Keith Martin  
Mrs. Robert B. Mayer  
Vincent Melzac Collection  
Gregory Mescha  
Phillip Morris, Inc.  
Gloria and Leon Moskowitz  
National Portrait Gallery (transfer  
from)  
J. Michael Newell  
Clive M. Norman  
Cynthia A. Norman  
Mrs. Sherwood Norman  
Mrs. Lucy Ball Owsley  
Mrs. Marion E. Pelzer  
Peter Powers  
Henry Ward Ranger Fund  
(bequests through the National  
Academy of Design)  
Steven K. Roberts  
Mr. and Mrs. Hugo E. Robus, Jr.



Mr. and Mrs. Oscar Rosen  
Mrs. Betty Ross  
Mrs. Edgar L. Rossin  
Lucy Norman de Sanchez  
Maltby Sykes  
Mrs. Katherine Sergava Sznycer  
Alma Thomas (bequest of)  
Elliott Thompson  
Mr. and Mrs. Milton Turner  
Heinz Warneke

Helen Joy Weinberg  
Keith A. Whitham  
Mr. Nelson C. White  
Adriana Williams  
The Woodward Foundation  
Mr. Mahonri Young  
Virginia Zabriskie  
The Zenith Corporation  
Harry W. Zichterman

## NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY

### *Donors of Financial Support*

Catherine Absalom  
Mr. Mark A. Adler  
AKA Fund, Inc.  
Amos Press, Inc.  
Anonymous  
Mrs. John W. Auchlincloss  
Donald B. Avey  
Virginia S. Ballard  
Mrs. Royal J. Bartrum  
The Bass Foundation  
Mr. and Mrs. William P. Bebbington  
Susann Beeson  
The Blythswood Charitable Trust  
Mrs. Helene D. Bodman  
Harold H. Bredell  
Mrs. Percy Brown  
Mrs. Weir M. Brown  
Carolina Virginia NCR Users Group  
Mr. and Mrs. Edward C. Childs  
Mr. and Mrs. Timothy W. Childs  
Herbert M. Davidson, Jr.  
Judith G. Denningham  
Mary W. Devlin  
Mr. and Mrs. Leroy E. Doggett  
Mr. Leroy E. Doggett  
Mrs. Martha Laprelle Edens  
Herman D. Engelberg  
Louis Engelberg  
Ruth T. Entrekin  
Linda R. Fisk  
Miss Margaret E. Floyd  
Mrs. Harvey Gaylord  
Mr. and Mrs. Paul Geier  
Lighting Business Group of General  
Electric  
Gloria Goertz  
Brandeis, Goldschmidt and Co., Inc.  
Great Eastern Numismatic  
Association  
Peggy McCoy Harper  
Jane S. Hart

Mr. and Mrs. William E. Harvey  
Mr. and Mrs. G. H. Himelhoch  
Virginia R. Hoff  
Mrs. Jane A. Holben  
Mailande W. Holland  
Dr. Bruce Howe  
Mr. Bruce Howe  
Alice G. Hoyt  
International Harvester Company  
Jean S. James  
Mr. Lee R. Jefferies  
The Johns Hopkins University Press  
Capt. E. E. Johnson  
Mr. Jess D. Keeler  
Mary L. Kerr  
Mr. and Mrs. Lee F. Kilbourn  
Ida B. King  
Genevive Koester  
Elizabeth and Naomi Kuziemski  
Mr. and Mrs. James F. Lawrence  
Miss Helen Levy  
Kathleen W. Malcolm  
Mr. John Russell Mason  
Mrs. Herbert C. Mayer  
Mr. and Mrs. Norman McCabe  
Foremost McKesson Foundation, Inc.  
Mrs. Loudon Mellen  
Eugene and Agnes E. Meyer  
Foundation  
Mrs. William J. Modell  
Mrs. Stephen V. C. Morris  
Marion N. W. Morton  
NCR Corporation  
Gerson Nordlinger, Jr.  
Mrs. Donald Notman  
Joanne M. Oldenski  
Elma V. Parkinson  
The Pfaltzgraff Company  
Dr. and Mrs. Lawrence J. Radice  
Riverway Co.  
Anne W. Robbins

Mr. Thomas M. Roberts  
 Mr. and Mrs. Daniel Rosenbaum  
 Rev. Jeffrey F. Samaha  
 Ben Shouse  
 Mr. S. N. Shure  
 Mrs. John Farr Simmons  
 Dr. and Mrs. A. C. Smith, Jr.  
 Mrs. Henry P. Smith  
 Mr. W. N. Harrell Smith  
 Mrs. Francis A. Smith  
 Mrs. Janet Solinger  
 Mr. Davidson Sommers  
 Genevieve P. Sowa  
 E. E. Stauber  
 Mrs. Harry A. Sylvester

Mrs. Sylvia Symington  
 Time-Life Books, Inc.  
 Pauline Bird Treman  
 Mr. and Mrs. Bronson Tweedy  
 Mr. and Mrs. C. Fred Tyner  
 Washington, D.C., Chapter  
 of the National Railway  
 Historical Society  
 Clarice Whitener  
 Dr. and Mrs. Jack William  
 The Womens Auxiliary of the  
 International Chiropractors  
 Association  
 Miss Flora P. Wright  
 Mary R. Zelenik

*Donors to the National Collections*

Margie Adam: tape by donor, "We Shall Go Forth," c. 1976 (1979.0728).  
 Robert F. Adams, P.E.: concrete core sample from Bellefontaine, Ohio, concrete street, 1892-93 (1979.0814).  
 Adler Shoe Shops, Inc. (through M. A. Gruber): man's shoes, 1979 (1979.0882).  
 Kitty and Ted Ahlm: 6 phonograph records (1979.0433).  
 Government of Aitutaki, Aitutaki Post Office, Postal Accounts: 4 used official stamps and 2 used postage stamps, all of Aitutaki (1979.0998).  
 Alabama Peanut Producers Association (through James Earl Mobley) and the Georgia Peanut Commission (through George M. Welchel): peanut sheller (1979.0279).  
 Alonzo E. Alderman: Burton Clinical Camera and related accessories (1977.0206).  
 R. P. Alexander: 2 mail-carrying cases of Japan from the late Tokugawa Period and a cancellation device of the 1890s (1979.1009).  
 Sheila Machlis Alexander: materials related to the civil rights activities of the Congress of Racial Equality, early 1960s (1979.0764); woman's necklace, 1968-72 (1979.1246).  
 Irving Amen: 78 woodcut prints, woodcut blocks, linoleum prints, linoleum blocks, and preliminary drawings made by the donor, illustrating "Gilg-mesh" (1979.0646).  
 American College of Radiology (through Dr. Fredric D. Lake and Dr. Harold N. Schwinger): collection of 257 artifacts related to medical radiology (1978.0435).  
 American Electric Power Service Corporation (through W. S. White): slide rule (1979.0831).  
 American Society of Mechanical Engineers (through Rogers B. Finch): F. and W. M. Faber Steam Engine, c. 1850 (1980.0277).  
 Clifford N. Anderson: refraction telescope with equatorial mount and tripod (1979.1017).  
 Anonymous: 2,736 lithographs and plates printed by Linton R. Kistler (1978.0650); cooking pan, patented by Hiram Hayden, 1851 (1980.0214); music or portfolio stand of ebonized wood and metal, Moosic, Pennsylvania, c. 1879 (1980.0125); miniature cast-iron fence to surround base of Christmas tree, c. 1900 (1979.1255); cast-iron pot with lid, frying pan (1979.1254); brass kettle, Husse, Pittsburgh, Pennsylvania, post 1870 (1979.1094); iron pan with lid, T. Holcroft and Sons, Wolverhampton, 1868-83 (1979.0727).  
 Daniel S., Grace D., and Susan B. Anthony, and Charlotte Anthony Sako: dropleaf table, revolving bookcase, and trunk (1980.0119).

Antique Wireless Association (through Bruce Kelley): Navy-type spark gap transmitter (1979.0872).

Patricia A. Antonisse: 2 Action Kits for ERAmerica's Mail Day, October 23, 1978, promoting passage of the Equal Rights Amendment and an Action Kit instruction guide (1979.0741).

Dr. Carlos E. Arabal: porcelain dish, Kuang Shü period (1979.1214).

Audrey Z. Archer-Shee: Fillmore bible, envelope with Confederate Flag containing a letter, 2 letters, a certificate of membership in the Ladies Mount Vernon Association of the Union, handwritten pass, and a handwritten copy of the report of the Third Division, 1st Army Corps (1979.0908).

Argonne National Laboratory (through Malcolm Derrick): Omega bellows assembly from the Argonne 12' bubble chamber (1980.0155).

University of Arkansas (through Professor Joel S. Freund): memory drum (1979.0850).

Mrs. Judith Arness: swift, used to hold silk or cotton warp (1979.0719).

Whitney Ashbridge: canvas bedstead bottom (1979.0827).

Mrs. T. W. Atkins: pitcher, "Apostles," stoneware with pewter lid (1979.1148).

Attica Historical Society (through Marian Stevens): white cotton banner with a rooster painted on it, made in 1894 to honor President Cleveland (1979.0176).

Mrs. Jean M. Aylor and Mrs. Olga M. Zauner: woman's hat, 1925-29 (1979.0510).

Peter Baghdasarian: Griswold barbed wire (1979.0604).

Bil Baird: puppet, "Slugger Ryan" at his piano (1980.0315).

Caroline L. and Louis A. Baisden: spatula c. 1920 (1979.1139).

Thomas M. Baker: shoemaker's foot measure (1979.0663).

Baltimore & Ohio Railroad: Letter to the President of the B & O Railroad, dated December 1829; invitation to the opening ceremonies of the bridge over the Missouri River, dated May 1871; invitation to the opening ceremonies of the Kansas and Missouri Bridge, dated April 1872; and an invitation to the opening ceremonies of the Illinois and St. Louis Bridge, dated June 1874 (1979.0912).

Baltimore Type & Composition Corp. (through Herbert F. Czarnowsky, Jr.): typefounding tools, type, and specimen books (1977.1082).

Sir Roger Bannister: track jersey used by the donor at the 1954 British Empire Games (1979.0614).

Merle Banta, Fred Carr, and Stephen Hinchliffe: "Ruby Slippers" worn by Judy Garland in *The Wizard of Oz* (1979.1230).

Mary G. Baratta, in honor of Elizabeth Pierce Parkhurst: nurse's winter cape worn by Elizabeth Pierce Parkhurst, R.N. (1979.1005).

Government of Barbuda, Philatelic Bureau, Barbuda Post Office: 16 mint postage stamps of Barbuda, 2 First Day covers of 1978 with flora and fauna issues, and 1 First Day cover of 1977 with the Barbuda Christmas issue (1979.0135); 46 mint postage stamps and 12 First Day covers, all of Barbuda (1979.0969).

Curtis H. Barker: Kelsey press and accessories (1980.0023).

Hobert L. Barlow: pin from the International Union of Operating Engineers for 30 years of service (1980.0400).

Frederick W. Bartlett: 6 offset prints depicting railroad scenes (1979.0893).

Donald P. Basham: items from the Knights of Khorassan and Knights of Pythias, including 15 receipts, an application form, a card case, a pocket calendar, and a certificate (1979.0434); 2 Missouri chauffeur's license badges and a magneto key chain fob (1979.0686).

Preston R. Bassett: 2 collapsible paper lanterns (1979.0756); half-minute glass and a navigational reel (1980.0229).



Bastain Brothers Company: 9 political buttons from 1952–60 (1980.0145).

Mr. and Mrs. James Lee Batson: American Agricultural Movement items, including a strike flag, flag poem, sticker, and a copy of *American Agriculture News* (1979.0890).

Mrs. Mary G. Bauer: 4 bone or ivory and wood spools of thread (1979.0718).

Bruce Bazelon: US Navy scrap books, c. WW I–WW II and US Navy officer's uniform insignia, period of the Civil War (1979.1160).

Georgia Vail Becker and Virginia Moore Vail: 34-star US flag, official date, July 4, 1861, to July 3, 1863 (1979.1141).

Robert Todd Lincoln Beckwith: 2 teacups with saucers, a footed serving bowl, and an oval tureen with cover from two different services owned by Mrs. Abraham Lincoln (1979.0738).

C. Edward Behre: Quaker Peace Witness materials including newsletters, broadsides, leaflets, magazines, and photographs (1979.0774).

Mrs. Peter Belin: 1 pair of doll stockings (1979.0676).

The Bergen Foundation (through Frances Bergen): Ventriloquist figure, "Charlie McCarthy" (1980.0273).

Don H. Berkebile: dolly jack, automobile cot, starting-crank holder, and a theft-warning auto lock (1979.0687); Troy trailer, c. 1915 (1979.0704); Grey cushion rubber tire (1980.0362).

Berkey Photo Inc., Konica Camera Company (through Peter M. Ildau): Konica C35 AF, autofocus, 35mm camera (1978.1035).

Thomas E. Berry: a collection of 561 mint and used postage stamps of Russia (1979.0125).

Dr. Julian H. Bigelow: Voltmeter, wattmeter, and ammeter (1980.0111).

Dr. Philip W. Bishop: Republican ticket portion of a ballot from Charleston, Rhode Island, dated June 2, 1891 (1980.0144).

Jane H. and Robert E. Blackwell: tool chest and collection of 141 woodworking tools (1979.1266).

Mrs. William McC. Blair, Jr.: woman's raincoat, 1973 (1979.0884).

George and Sarah Blow: Protestant religious chart (1979.0331).

Mrs. Theodore Bossart: needle-threading machine and 19 embroidery examples (1979.0491).

Estate of Knowlton K. Boyce (through Ransom K. Boyce): metal kerosene stove, c. 1899 (1979.0677).

Eleanor L. Boyne: cartoon from "Judge," 1888 (1980.0205).

James F. Bradford, Jr.: framed fragment of the Fort McHenry flag at the time of attack in 1814 (1979.1058).

Miriam C. Bradley: poster used in the July 1978 ERA march in Washington, D.C. (1979.1112).

Michael Brancato, in memory of Anne Brancato Wood: collection of political materials concerning the career of Anne Brancato Wood (1979.1043).

Mrs. Helene Bress: 2 coverlet fragments (1979.1217).

Mrs. Clifton Bright: a sign, magazine, and newspaper used in the United Mine Workers Association strike in 1978 (1980.0117).

Patricia Tofflemire Brink: T-shirt, "Convention Aide" used during the IWY Houston Women's Conference, November 1977 (1979.0743).

Bruce M. and Diana B. Browneli: a collection of textile implements (1979.0208).

Lloyd A. Buchalter: thermostatic heat control (1979.0891).

William N. Buckner: marionette used in amateur production of "Snow White and the Dwarfs" and the script for "Snow White and the Dwarfs" (1980.0197).

George G. Bull: 3 US covers cancelled during the Eighteenth Annual Postmark Collectors convention, 1979 (1979.1010); 22 mint postage stamps of the Peoples Republic of China issued in 1978 and 1979 (1979.1047).

Martin Burke: 6 real-estate signs (1979.0975).

Jean R. Burris: 31 phonograph records, 78 rpm (1980.0132).

Sarah S. Burts: silver pitcher marked by E. J. Johnston (1979.1161).

Butler University (through Dr. H. Marshall Dixon III): direct vision spectro-scope (1980.0053).

Robert Butman, in memory of William H. Finkel, Jr., and William H. Finkel, Sr.: 4 patent applications (1979.1114).

The Leonard Harvey Calaway Family (through E. D. Calaway): 14 tools hand-forged by Leonard Harvey Calaway (1979.1040).

Verne B. Calvert: woman's clothing items including a 2-piece dress, petticoat, dress, and a coat (1979.0087).

Charles T. Campbell: picture of Grandmother Campbell and her son Shontz, c. 1879 (1979.0820).

Carey Company: 8 political pennants and 2 advertising posters from 1960 (1979.1166).

Lettie Gay Carson: Seth Thomas shelf clock (1980.0426).

Mrs. Richard L. Carter: woman's Adrian coat, 1940-49 (1979.0389).

Steve Cauthen: jacket (racing silks) used by the donor (1979.0615).

Frank G. and Rose Cejka, James M. Hammond, Mitchel Frank Hammond, and Adrienne Marie Hammond: man's horsehide coat, c. 1900 (1979.0083).

University of Chicago, Ryerson Physical Laboratory: chronoscope, optical bench, heliostat, spectroscope, engineer's tape and reel, and a spectrometer (1978.0798).

Children's Television Workshop (through Robert A. Hatch): Sesame Street material including a street sign, trash can, "Rubber Duckie," and the costumes worn by the characters "Mr. Hooper," "Bob," and "Susan" (1979.0952).

Republic of China, Directorate General of Posts (through Y. C. Shih): 101 mint postage stamps, 47 used postage stamps, 23 mint specimen stamps, 13 First Day covers, and 1 mint souvenir sheet, all of the Republic of China (1979.1002).

Elvira Clain-Stefanelli: John F. Kennedy Center Inauguration program (1980.0218).

The Cleveland Medical Library Association, Howard Dittrick Museum of Historical Medicine (through Patsy A. Gerstner): 3 Mulford aseptic shields (1980.0337).

The Heirs of Jessie B. and Richard F. Cleveland: Jessie B. Cleveland clothing items including 2 parasols, 2 hats, 2 two-piece dresses, 2 morning dresses, wedding dress, pair of shoes, handkerchief, dress bodice, guimpe, vest with matching collar, skirt, evening jacket, photograph album of the Cleveland family, and a fishing rod and case which belonged to Grover Cleveland (1979.0901).

Josephine Cobb: campaign paraphernalia consisting of ribbons, campaign buttons, lapel pins, and inaugural souvenirs (1979.1208).

Charles H. Cockrell: box with pin-cushion top (1979.1165).

Barbara J. Coffee: 2 jacquard coverlet fragments (1979.0897); 6 brass teaspoons (1979.1106).

Rosalee S. Cohn: Sèvres sugar bowl with lid and Vincennes cup (1979.1146).

Herbert R. Collins: 12 Christmas-tree balls in cardboard box (1980.0106); arm band with portrait of Al Smith, 1928 (1980.0206).

Republic of Colombia (through Campo Anibal Toledo): 14 First Day covers of Colombia, 1979 issue (1979.1001).

Alan J. Compton: sketch of the set for the NMHT exhibit "Ten Years of Sesame Street," by the donor (1979.0616).

Computer Sciences Corporation (through T. L. Gunther): Theodolite with battery pack and battery case (1979.0809).

Lynne Conlee: woman's shorts, woman's scarf, and a hair brush (1979.0480).



Government of Cook Islands, Ministry of Posts, Philatelic Bureau (through Officer in Charge): 19 mint postage stamps, 6 mint souvenir sheets, 5 First Day covers, 2 used stamps, and 2 used official stamps, all of Cook Islands (1979.0970).

Bernadine R. Cooley: X-ray head clamp (1980.0129).

Mrs. Grace R. Cooper: wood printing block (1979.1097).

Dr. Ivor Cornman: curd cutter, wooden brace, and a hoe (239502).

Robert J. Cousy: Celtics basketball uniform and shoes worn by the donor (1979.1072).

Liza Cowan: women's history objects, including flyers, buttons, a journal, and stationery (1979.0765).

Cranford Historical Society, Inc. (through Lawrence P. Fuhro): Henry Clay campaign flag, 1844 (1980.0146).

Ruth C. Crocker: woman's dress designed by Robert Piguet (1979.0511).

Mrs. Ruth E. Crownfield in the name of Albert C. Crownfield, Jr.: set of drafting instruments and calculus book (1979.0868).

Joseph Cummins: 2 Alfred E. Smith bar pins from the 1928 Democratic campaign (1980.0396).

Turkish Federated State of Cyprus (through Director of the Department of Posts): 13 mint postage stamps, 5 First Day covers, and 1 mint souvenir sheet, all of Turkish Cyprus (1979.1000).

Virginia Daiker: 2 tar buckets (1980.0162).

Mrs. Sophie R. Dales: porcelain figure group of the Nativity (1979.1149).

Jerry Dallman: Victor Records phonograph records order bank, August 1915 (1979.0193).

Dannon Milk Products (through Juan E. Metzger): 1-pint Dannon yogurt bottle and a 1/2-pint Dannon yogurt bottle, c. 1942 (1980.0029).

Marshall Daugherty: 2 bronze medals entitled "Apollonian-Dionysian" and "Winterset" designed by the donor (1979.0113).

Dr. Donald H. Davenport: 12 photographic prints by Professor C. H. Roblot (1977.1036).

Ruth H. Davis: a one-keyed flute by Firth Hall & Pond (1979.0849).

Gregory K. Day: "Tabby" brick, c. 1740, from Oakland Plantation in Charleston County, South Carolina (1979.0590).

Harry L. De Alfi in memory of Joseph De Alfi: pocket watch (1980.0445).

Dona Zeitz Dellair and Tommy Wonder 123: Puppet "Suzanne" and her traveling trunk, cane, 2 dresses, and 2 jackets (1980.0157).

Anne M. Dean: *Sewing Primer*, 1886 (1979.0712).

Mills Dean III: TMB Type LA Strain Indicator, c. 1945 (1980.0046).

Delta Drilling Company (through Keating V. Zeppa): black and white, 16mm film depicting oil-field scenes from the early 1930s in east Texas and northern Louisiana (1980.0084).

Dorothy M. Demotte: patent document for phonogram reproducing apparatus (1980.0424).

Deanna and Jack Dempsey: photographic portrait of Jack Dempsey, c. 1923 (1979.1022).

Kingdom of Denmark, Ministry of Public Works, General Directorate of Posts and Telegraphs: 75 mint postage stamps of Denmark and 25 mint postage stamps of Greenland (1979.0967).

Cleveland H. Dent: campaign and inaugural items for Marion Barry, Mayor of the District of Columbia, 1978-79 (1979.0772).

Dentsply International (through Norman D. Spaulding): set of "black teeth dentures" (1979.0918).

Herbert DeRyder: 3 electron tubes, Edison effect, Welch, and Triode (1979.0873).

Des Moines Register and Tribune (through Michael Gartner and Maxine



Perry): excerpts and highlights of the Republican candidates' forum printed in the *Des Moines Sunday Register* (1980.0208).

Robert G. Desme: 3 Bromoil transfer photographic prints (1979.0993).

Robert E. Dibble: ticket to the 1932 Olympic Games in Los Angeles, California (1979.1024).

Walt Disney Productions (through Wayne Morris): three-part animation cel used in the Walt Disney Production film *Rescuers* (1979.0978).

Mr. and Mrs. Larry Doby: Cleveland Indians baseball shirt and hat worn by donor (1979.1034).

Donald D. Donohue: mariner's compass in wooden box (1980.0179).

Hugh D. Dorsey: collection of 26 pieces of concrete reinforcing-bar samples (1979.1007).

Gladys C. Dougherty: needle case and pincushion (1979.0495); silk fabric (1979.0722); silver metal sewing kit marked "EVERYBODY'S FRIEND / THE FARMERS / NATIONAL BANK SALINA, KANSAS" (1980.0330); Red Cross materials including 2 volunteer pins, a volunteer cap and a blood donor pin, all c. WW II (1980.0346); booklet, "Lead Kindly Light," by J. H. Newman (1980.0188); 2 miniature souvenir baseball bats from 1939 (1980.0272); Vietnam poster, "Bring All The Troops Home Now," a broadside, "The American's Creed," and ration materials (1980.0269).

Government of Dubai, General Post Office, Philatelic Section: 2 mint postage stamps from the United Arab Emirates (1979.0999).

Ruth E. Duncan: puppet, "Solwig's father" from the Peer Gynt marionette production (1980.0300).

Alfreda M. Barnett Duster: book, *Crusade for Justice: The Autobiography of Ida B. Wells* (1979.0740).

Mrs. Llewellyn N. Edwards: engraving, *The Iron Bridge at Colebrook Dale*, printed April 1, 1806 (1979.0911).

Central Bank of Egypt (through Manager, Note Issue Department): 3 new specimen banknotes of Egypt (1979.0638).

Asbeth Lee and Jack M. Eichner: 197 phonograph records (1979.1023).

C. P. Eldridge, in the name of the grandchildren of Maria Louise Eldridge: embroidered handkerchief, 2 embroidered borders, embroidered motif, and collar (1979.0499).

Mrs. Dorothy M. Ellis: copy of "The New Phonogram," 1905, and a broadside, "Wanted! 250 Million Pounds Kitchen Fats for War Use" (1980.0037).

Harold W. Ellis: US Coast Guard enlisted man's blue utility jacket worn by the donor in the late 1950s (1979.1123).

Sheldon W. Engle: handkerchief made by Mrs. Edwin M. Stanton, wife of the Secretary of War, in 1865 (1980.0209).

Donald S. Evans: 1 shirt, "British Leyland / Quaker State" (1980.0303).

Chris Evert: tennis racket used by the donor (1979.0617).

John C. and Margaret E. Ewers: 39 phonograph records, "Hit of the Week" (1980.0185).

Stephen M. Falatko: 500 baseball and football cards (1980.0201).

Federal Election Commission: 1 summary sheet, information packet, and booklet, plus pamphlets and handouts (1980.0393).

John H. Fell: 2 photographs of Rosalyn Carter wearing her inaugural gown on January 1, 1977 (1979.0665).

Fermi National Accelerator Laboratory (through Philip V. Livdahl): braid of superconducting wire, superconducting cable section, main-ring dipole magnet, main-ring quadropole magnet, and superconducting dipole (1980.0126).

David W. Field, Jr.: pamphlet on D. W. Field "Straight Line Water Filtration System," 1907, and a salesman's model of Spencer Damper Regulator (1979.1049).

Marabeth S. Finn: desk lamp, c. 1910, and an electric breakfast set (1979.1044).

Irene and Walt Fischer: 1 running iron and case plus a stool and ashtray holder (1980.0311).

Dr. Robert E. Fischer: set of 2 contact lens cases, 1 contact lens case, slide rule, and a scleral shell press (1979.0700).

Florida Institute of Technology (through Donald V. Stophlet): polarizing apparatus (1979.0840).

Folk Art Fund: painting, *Taking the Cotton to the Gin* (1979.0710).

Mrs. Donald W. Foote: woman's necklace and 2 compacts from the 1950s (1980.0158).

Georgia E. Foster and Margaret Foster Remmele: 38-star US flag, official date 1877–1890 (1979.0865).

David Fox: spark coil transmitter, c. 1905 (1979.0644).

Dr. Grace Fox: pieced work and applique quilt, lady's shawl, and a single-weave jacquard coverlet (1980.0253).

Franklin College (through Raymond Cowan): earth inductor marked "JAS. W. QUEEN & CO. MAKERS PHILA." (1979.1018).

Franklin Machine Company: letterpress copy of a note and a letter by George Corliss (1979.0910).

Franklin Mint (through Martin F. Walsh): 2 new specimen banknotes from Tanzania (1979.0443); 4 specimen banknotes from Sierra Leone (1979.0606); 5 specimen banknotes from Paraguay (1979.0688); 6 specimen banknotes from the Philippines (1979.0706); 3 new specimen banknotes from Malta (1979.0837).

B. L. and Louise S. Freeman: playbill from the Park Theatre in New York City, August 1847 (1980.0087).

Roland L. Freeman: barrel basket (1979.0851).

Dr. Milton J. Freiwald: replica of a machine-gun spring and rod the donor removed from a patient's eye (1979.1031).

Melinda Y. Frye: booklet, "Greeters' Guide to Washington," 1930 (1979.0666).

Gardner Communications, Inc. (through R. Gardner): sheet music, "I'm Feeling Good About America;" reel of President Ford's campaign song, "I'm Feeling Good About America" in seven versions, music and lyrics by Robert K. Gardner (1980.0395).

Gardner-Miller Fund: mid-eighteenth century Italian porcelain plate (1979.1223).

Dr. Douglas M. Gay: 34-star US flag, official date July 4, 1861–July 3, 1863 (1979.1121).

Charles Gellert and Claudia A. Lipschultz: 2 women's movement banners (1979.0733).

Irving Gershkoff: pastry board with carving of General Zachary Taylor (1980.0067).

Thomas Gibbons: set of drain-cleaning tools, consisting of 3 forged iron heads and 20 hardwood canes (1979.1041).

Edgar S. Giles: woman's opera glasses, 1875–1925, and brooch, 1885–1898 (261981); wooden level and a honing stone (1978.2145).

William A. Gillen: 36 labor-union convention badges (1980.0316).

John Girard and Mrs. Sophie G. Mouton: 7 agricultural implements (1980.0422).

Mrs. Anna S. Gladding: scrapbook with envelope corners of Civil War Patriotic covers (1979.0636).

Mrs. Hymie Goldberg and Jose C. Santanna: Perkins union-dues book (1979.0777).

James M. Goode: G.E. refrigerator, 1929 (1979.1015); Boy Scouts of America items, including a compass, map, Eagle Scout Award certificate, merit badge sash, Eagle award in box, neckerchief with 3 clasps, Piedmont Boy Scout Camp emblem, Explorer cap, and a white cloth belt (1979.1231).



Mrs. Jennie Lee Gorton: painting, *Shot Gun House* (1979.0709).

Frank M. Graves: Kalkometer adder, Pickett & Fockel slide rule, instruction booklet for Pickett deci.log log slide rule, and instruction booklet for Pickett 300 log log trig pocket slide rule (1979.0601).

Dr. Albert G. Greene, Jr.: Welte "Philharmonic Organ" (1980.0213).

Mrs. Virginia Wayekoff Gregg: diploma awarded by the American Institute to Benjamin Pike, Jr. (1980.0013).

Nicholas Grossman: Persian 5½-inch Pseudo-Astrolabe (1979.0852).

Government of the Republic of Guinea (through Agence Philateliqué de la République de Guinée): 8 mint postage stamps and 2 used postage stamps, all of the Republic of Guinea (1979.0995).

Edith M. Gullett (through Martin J. Murtagh): gold thimble (296665).

Janet Guthrie: auto-racing suit and crash helmet worn by donor in the 1978 Indianapolis 500 (1979.0791).

Alfredo and Raquel Halegua: Violin by Antonio Mariani, c. 1650 (1978.2531).

Reverend Joseph A. Haller, S.J.: WIRT DIM-A-LITE (1979.0874).

John Handley High School (through George Craig and Dorothy M. Overcash): early electrical equipment, from backstage of the Handley High School auditorium (1979.0875).

Mary Sue W. Hannan: bandanna depicting L'Enfant's map of the District of Columbia and a scarf showing buildings of the Washington, D.C., area (1980.0069).

James A. Hanson: Russian percussion converted musket (1979.0902).

Hardesty & Hanover Consulting Engineers (through Henry W. Fischer): reflecting hand level (1979.0839).

Edward W. Harkins, Sr.: 7 nails (1979.0845).

Michael R. Harris: 8 Pimlico Race Track betting slips, 7 marked "EXACTA" and 1 marked "No. 5, Eighth Race" (1979.0618); special parking permit from the 1979 World Series in Baltimore (1980.0079).

Mrs. A. L. Harrison and Lewis Harrison: toy bear, 1928 (1979.0938).

Marcia T. Harrison: 2 metal boxes of waxed matches from the Robert Scott expedition to Antarctica, 1902 (1979.0448).

Karen A. Hay and Mrs. Evora Giddens McAdams, in memory of Sank and Della Giddens: child's shoes, c. 1910, and a button hook, 1917 (1979.0061).

Elizabeth Haynes: Richard Nixon 1968 campaign button (308933).

Margaret S. Headley: 8 items relating to Albert J. Headley's tour of duty with the Washington police (1979.0360).

Helaine Victoria Press (through Jocelyn H. Cohen and Nancy Poore): collection of 34 postcards, postcard album, and business cards (1979.0785).

William H. Helfand: 17 patent medicines and vitamin samples (1979.0936); collection of 14 patent medicines (1980.0317); collection of 18 pharmaceutical items (1980.0428).

Dorothy M. Hennessy, Rosabell Leistra, and Jeannette L. Marsall: field glasses loaned to the Department of the Navy in response to their appeal for "Eyes for the Navy" during WW I (1980.0130).

Lloyd E. Herman: silversmithing hammer (1980.0353).

Hershey Food Corporation, Hershey Chocolate Company (through Earl J. Spangler and James A. Edris): triple chocolate liquor mill, four pot conche, and a depositor (1980.0021).

John S. and Nancy S. Higgins: 4 items of marked American cut glass (1979.1138).

Margaret Hildt: papers relating to President and Mrs. Wilson (1979.0905).

James J. Hill: Labor union materials including 14 buttons, 5 badges, 2 ribbons, and 1 invitation (1980.0128).

Jessie L. Hill: 2 driving aprons, c. 1900 (1979.0680).

Elyssa and Michael Hillman: set of drafting instruments (1979.0420).



Kemp B. Hobbs, Jr.: program to "The Student Prince" 1932, courtesy pass issued to The Honorable Clinton A. Fowler in 1932, and an itemized bill from "Murphy's Hotel" (1980.0082).

Captain Alan S. Hodges: 2 pairs of US Navy enlisted man's dungarees, WW II, and 2 US Navy enlisted man's white hats, WW II (1980.0074).

Seymour R. Hollander: 1 set of 4 glass X-ray plates—G.I. series, and 6 glass X-ray plates, including 2 chest, 1 right shoulder, 1 large intestine, 1 stereo chest, and 1 ring finger (1980.0010).

Donna M. Horié: girl's dress, 1930 (1979.0278).

Kenneth L. Hosner: 1980 Carter campaign buttons (1980.0391).

Hotel and Restaurant Employees and Bartenders International Union Local #14 (through Malcolm C. Simmons and Louise Metzger): silver loving cup inscribed "Won by Waiters Union No. 14 For Best Float" (1980.0101).

Howard W. Hruschka: Hohner accordion and carrying case (1980.0333).

Chris Hughes: 349 baseball cards and 3 King Kong cinema cards (1979.0456); Walt Whitman High School graduation cap and gown worn by the donor, June 1979 (1979.0792).

Cornell C. Hunter: plan and particulars for making Bank of England note molds, 2 paper molds and 1 deckle, mold with deckle, mold without deckle, rubbing from a 10-part paper mold (1979.0925).

Cornell C. and Irene R. Hunter: paper mold for banknote paper (1980.0056).

William Elderkin Huntington: silver sugar bowl and cream pitcher made by silversmith William Thomson, 1809–35 (1979.0955).

Mrs. Martha F. Hupper: red and white cotton damask tablecloth (1979.0717).

Dr. Lewis M. Hurxthal: film, "The Mechanism of the Heart Beat and Electrocardiograph," with a manuscript describing it, and the film, "Endocrinology—Including the Physiology of Menstruation and Pregnancy" (1979.1012).

Emil A. Husayko: 37-star US national flag, official dates July 4, 1867–July 3, 1877 (1980.0412).

James S. Hutchins: Ambrotype of Benjamin Vorhees (1980.0051).

Dorothy D. Hutchinson: carved ivory pen top and Iowa Republican League ribbon (1979.0946).

Ici Americas, Inc. (through Andrea L. Lose): Archimedes calculator (1979.0419).

Ideal Toy Corporation (through Stewart C. Sims): 1 "Smokey the Bear" stuffed toy (1980.0207).

Clare Cardozo Imburg: silver glove-darner and bodkin case containing 3 bodkins and a stay (1979.0500).

Frank Incantalupo, in memory of Thomas Incantalupo: 2 offset-lithography proof books for cigar-box covers (1980.0072).

State of Israel, Ministry of Posts (through Director General): 10 First Day covers of Israel, 1979 issue (1979.0997).

E. Bee Jackson: 11 medals from The Woman's Relief Corps, the Woodmen of the World, and The Shriners (1979.0745).

Estate of Kenneth D. Jacobs (through Thomas F. Jacobs): 4,408 philatelic objects (1979.0332).

Carl Jaeschke: Prohibition ribbon (1979.0736).

John Spaulding John and Patricia John Keightley: portrait of Oveta Culp Hobby by Grace Spaulding John (1980.0387).

Charles E. Johnson: framed memorial of James Abram Garfield (1979.1104); 3 handkerchiefs, "Souvenir De France," 1918–1919, and a chamberstick holder (1980.0290).

Martin Jolles: drawer bottom with Robert Ligget label (311524).

Mary Rose Jones: cup and saucer of same design as the Wilson White House China, marked "White House 1918" (1980.0266).

William T. Jones (through Ronald A. Foster): rural mail box (1980.0359).

Jane S. Jordan: 3 cartons of cigarettes (1980.0060).

Cassandra Hutchings Kabler, Margaret Swartout, and Sigrid Trumpy: banner from the anti-nuclear rally in Washington, D. C., on May 6, 1979 (1979.1134).

Charles H. Kaman: Adamas guitar and Ovation guitar (1979.0818).

John S. Kebabian: Staff and General Officer's sword, scabbard, and cover (1979.1201).

Mrs. Edith C. Keenan: 153 pennants and 49 labels (1979.1162).

Ruth Loujean Kelly and J. Wallace Kelly: 3 film halters, box of panchromatic glass plates, box of orthochromatic glass plates (1979.0903).

Alan Kemper: Zitter (1980.0332).

Anne L. Kendig: WW I US Naval Reserve Yeoman "F" white uniform coat and skirt, blue uniform cape, photographs of donor wearing uniform, US Naval Reserve Force Discharge issued to the donor, and *The American Legion Magazine*, November 1977 (1979.0898).

Mrs. Lowell D. Kennedy: ingrain carpeting fragment (1979.0855).

Stetson Kennedy: Poster, "National Union Label Week, May 10–16, 1948" (1979.0726).

Mrs. H. Nelson Keyser: 3 pewter thimbles (1979.1079).

Gretchen King: typewriter, c. 1904 (1980.0447).

Pee Wee King: Commemorative plaque for the "Tennessee Waltz" and an autographed record jacket (1980.0270).

Richard T. Kisualas: 2 J. B. Colt carbide feed gas generating tanks and 1 gas bell chamber (1979.1268).

Florence L. Kite (through Steven Miller): 4 original political cartoon drawings by C. R. Macauley (1980.0211).

Margaret B. Klapthor: *Rules of Practice, Supreme Court D.C.*, 1815 (1980.0153).

Mrs. Catherine Koehler (through Pacific Telephone): 4 glass insulators (1979.0894).

Chris Kositzky: Charlie McCarthy Radio Game (1980.0100).

Kenneth L. Kramer: Union material, including 47 buttons, 20 badges, 2 hats, and a keychain (1979.0976).

Carol L. Kreglon: 1 pair of woman's earrings (1979.0871); woman's brooch and earrings, 1950–1959, and an advertising poster from *Peterson's Magazine* (1979.1227).

Charles M. Kreszock: 4 x 5 folding plate camera, wooden tripod, focusing cloth, 3 lenses, 2 printing-out paper packages, postal card masks, print trimmer (1980.0141).

Michael R. Krivit: Newspaper *Harper's Weekly*, and book *Visions of Columbus* (1980.0328).

Edward C. and Kathryn B. Krupp. a banner, flag, tintype, phamphlet, newspaper, and photographs (1980.0327).

Sarah Sappington Kuhn: 16mm print of film titled, *Rap* (1979.0739).

Robert Kwalwasser: sign, "MURTAUGH" from the Pittsburgh Pirates baseball team manager's office door (1979.1256).

Simon Lake III and Thomas A. E. Lake (through Benjamin A. G. Fuller): 13 original half and full models of submarines designed and built by Simon Lake of Bridgeport, Connecticut, c. 1902–20 (1979.0864).

Charles C. L'Allemand: shipping tubes and parts (1979.0716).

Steve Landesberg and Jean Soo: NYPD badge, ceramic coffee mug and desk nameplate used by Jack Soo on *The Barney Miller Show*, and 2 movie posters from *Flower Drum Song* (1979.1008).

Ruth Larson and Harry K. Short: 2 textbooks—*A Complete Arithmetic, Unit-ing Mental and Written Exercises* and *The Eclectic History of the United States* (1979.0457).



Edmond J. LeBreton: buttons, badges and press credentials used during the Republican and Democratic campaigns of 1964–76 (1980.0392).

James R. Lee: phonograph record by the Beatles, c. 1965 (1979.0989).

John P. Lefner: fanning mill (1980.0421).

Irene S. Leung: 5 buttons supporting the normalization of relations between the US and the People's Republic of China (1979.1003).

King S. Levin: Handwritten autographed manuscript of sheet music, letter of documentation dated October 27, 1886, and a printed copy of sheet music (1980.0066).

Henry C. Lickel: set design for *Those Were the Days*, in 3 sheets (1979.0458); set design for the TV pilot show *Justice for All*, 1968, designed by the donor (1979.0985).

Jonathan Liebenau: 6 pharmaceutical objects (1980.0182).

James B. Lile: 1 handmade lock, folding knife (1980.0386).

H. L. Lindquist Publications, Inc.: 1,400 miscellaneous covers, First Day covers, Postal stationery, souvenir sheets, and post cards of the US and foreign countries (1980.0062).

Elizabeth R. Lindsay: Centennial Exposition and Washington, D. C., memorabilia (1979.0459).

Leopold U. Linton: Book, *Parliamentary Procedures* by Lillian Cole Bethel, dated 1894 (1980.0268).

Dr. Robert J. Locurto: collection of 16 contraceptive and pharmaceutical objects (1980.0160).

George E. Logue: Caterpillar ten tractor and sickle bar mower (1979.1060).

Ramona Long: 2 official posters from the 1963 March on Washington for Jobs and Freedom (1979.1207).

Mrs. Walter Louchheim: 55 pieces of women's, men's, and girl's clothing accessories (320014).

John L. and Nancy Maytag Love: model Maytag hay baler (1979.0603).

Geneva Kay Loveland: print of the film *Farenthold: A Texas Chronicle* (1979.1206).

Jerry R. Lucas: New York Knicks basketball uniform worn by the donor (1979.0534).

D. E. Lukins: amateur baseball glove, pancake style, c. 1895 (1980.0271).

Philip K. Lundeborg: Swedish mine horn and firing apparatus, mid-twentieth century (1979.0821); book, *Damage Control*, by Naval Training School, 1944 (1979.1122); plastic ship models for destroyer *Gearing*, c. 1930s, Destroyer "Fletcher" Class, WW II, Russian Cruiser "Swordlow" Class, WW II, and Rocket Cruiser "Boston" Class, 1950s, all made in Germany in the 1970s (1980.0040).

Kenneth Lynch: 2 large fids and a wood maul (1980.0263).

J. F. MacDonald: button, "Jane Byrne for Mayor / One Chicago" (1980.0288).

Mrs. Richard M. Mace: 5 women's shoulder pads (1979.0092).

Adele Squibb Maclay: set of 3 bound volumes of E. R. Squibb's diary written on his trip to Europe in 1890, and 1 bound volume of newspaper clippings, letters of condolences, etc., relating to the death of E. R. Squibb (1979.1132).

Osceola H. L. Madden: 16-star, silk, Civil War flag (1980.0055).

Wilfred R. Maggiar: 34-star US flag allegedly flown from the *US Monitor* in 1862, or during the American Civil War (1979.1080).

Emilie Noakes Manley in memory of Margaret Clarke Goodall Bradley: appliqued and embroidered bedcover, signed by President Benjamin Harrison and cabinet members; appliqued and embroidered bedcover bearing the signature of President Theodore Roosevelt and cabinet members (1979.1019).

Roger Manley: French tuberculosis poster (1980.0321).

Mrs. C. Harrison Mann, Jr.: 5-piece tin-glazed earthenware tea service made in Marseilles, France, c. 1748–93.



Lucile Q. Mann: canvas-work picture, in original frame, of Prince Albert's favorite greyhound (1979.9879).

Kenneth Margolies: labor union materials, including 6 buttons and 1 poster (1979.1048).

Marine Hall Fund: Marine course indicator (1979.0825).

Lorraine D. Marsh: Christmas tree ornament, c. 1918 (1980.0178).

Howard W. Marshall: adobe brick, c. 1870, and a trivet (1980.0019).

Jay Marshall: glove puppet, "Lefty," used by the donor (1980.0283).

Walter L. Mason, Jr.: political poster of Levi P. Morton (1979.0945).

Mary E. Maxwell Fund: stoneware jug, child's highchair, wood clothes rack, clam basket (1979.1173).

George W. Maynard: model of a vise seat (1979.0802).

Edith P. Mayo: 5 items from "The Longest Walk" including an article, hand-out, letter, poster, and a T-shirt (1979.0163); 5 copies of *The Evening Star* newspaper, 1 copy of *The Sunday Star* newspaper, issues relating to President John F. Kennedy's death (1979.1210).

Henry C. Mayo: WW II ration books, newspaper article, tire inspection record, and literature (1979.0937).

McCarthy for President (through Ralph E. Becker): campaign paraphernalia related to the Eugene McCarthy Presidential Campaign in 1968 (1980.0394).

Charles G. McCausland: ship model of the USS *Constitution* (1980.0107).

Kathleen McDermott, in memory of Lance Corporal Richard Allen Cassell (through Bruce Bazelon): US Marine Corps enlisted man's summer service uniform and accessories, 1969-70 (1979.0547).

Lula Jean McDowell: 2 hand fans with pictures of black elected officials (1979.0752); 5 handouts and a bumper sticker used in George Bush's Republican presidential campaign (1980.0172).

George E. McGarry: USMC field parka used during winter training at Camp Polar Bear and a pair of white survival gloves, 1950 (1980.0450).

Mary U. McLaughlin: 27 phonograph records (1980.0099).

Franklin and Irene Leahy McMahon: 2 16mm prints of political campaign films (1979.0630).

Grace Roosevelt McMillan: silver gilt card case owned by Edith Carow Roosevelt (1979.0758).

Anita McMonigle: 1 copy of *Newsweek* magazine, June 9, 1980 (1980.0397).

George Meany Center for Labor Studies (through Philip Yunger): 3 strike posters (1979.0990); (through Genevieve M. Lutz): labor union materials including 9 phonograph records and 11 posters (1979.0913); 2 union booklets (1979.0977).

Patricia P. Medina: collection of prints, posters, and illustrated books by H. A. P. Grieshaber (1979.0928).

Esther Ch. Meixner and Ruth L. Meixner: portrait of Edgar Bergen and Charlie McCarthy by C. von Schneidau (1980.0361).

Henry Melnicoff: Agfa flashlight-lamp and a lens with brass barrel (1980.0198).

Jean C. and Leroy M. Merritt: racquetball equipment and clothing and bumper sticker from the Towson Court Club (1979.0799).

Leah G. and Merle D. Michael: 72 phonograph records (1979.1021).

Michigan Friends of Chester A. Arthur (through Jerry D. Roe): Chester A. Arthur memorabilia including 1 book, traveler's light, letter opener sheath, boot hooks, shoe buttoner, pin tray, cigarette case, cigar cutter, and a Grant medal (1978.2198).

Mrs. Marian C. Mickelwait: 2 Christmas plates from 1979, 1 by Bing & Grondahl, the other by Royal Copenhagen (1979.0923).

John T. and Diana C. Middleton: 1 Jacquard woven coverlet, "1938 OHIO" (1980.0089).

- Madge O. N. Middleton: 55 eighteenth-century banknote engravings by George B. McCartee and George W. Casilear (1980.0221).
- Dr. R. Hunter Middleton: 2 impressions printed by the donor from Bewick's woodblock *Horses* (1979.0926).
- David and Joseph Miller families (through Irene V. Galdston and Irving D. Miller): collection of 87 knives and knife-making tools (1979.1204).
- Minnesota Historical Society, Division of Archives and Manuscripts (through John Wickre): lithograph, *Hamilton Woolen Co.*, c. 1870 (1979.0869).
- Fern Mischke: Van de Kamp's Bakery Uniform, including dress, apron, cap, and pin (1979.0460).
- Charles M. Momberg: 2 Army-Navy production awards and a card of presentation that accompanied the production awards (1980.0078).
- John B. Montville: hub odometer, 1915 (1979.0681).
- Bobby Morrow: Olympic Gold Medal won by donor in 1956 for track (1979.0619).
- William B. Mozey, Jr.: swagger stick with silver top and Chinese markings, US China Expedition (1980.0223).
- Ms. *Magazine* (through Joanne Edgar and Gloria Steinem): preview issue (Spring 1972) of *Ms. Magazine* (1978.1079).
- Alberta M. and John H. Murphy: 2 union booklets from 1927 (1979.0753).
- Mrs. John H. Murray: watercolor painting of a young woman, a painted tinware deed box and 2 tinware alphabet plates (1979.1143); saucer, plate, and bottle (1980.0210); 16 nineteenth-century fashion plates (1980.0325); 1 cast-iron bank, 1 wooden kaleidoscope, 1 porcelain doll's head, plus a papier-mâché tray, all made between 1850 and 1900 (1980.0341); straw embroidery fragment and damask fragment (1979.0720); damask towel, lady's purse, sampler, crocheted center piece, embroidered picture with frame, and a sewing box (given in memory of John and William Wood) (1979.1250).
- Stan Musial: baseball bat used by the donor to achieve the 3,000 hit goal on May 13, 1958 (1979.0620).
- Dr. Eugene E. Myer: 13 medical objects, including 2 doctor's signs, surgical operating lamp, sterilizer, electro-therapeutic device, cotton holder, instrument sterilization tray, surgical drill, electrical foot treadle, engine mount, metal container, chiropodist chair, and an instrument cabinet (1979.1095); 2 shaft hangers, bench power press, leather-cutting die, bench leather splitter and a line shaft with pulley (1979.1096); 41 pieces of type-making tools and equipment (1980.003).
- Anne B. and Denys Peter Myers: ingrain carpeting fragment (1979.1218).
- Dr. Perham C. Nahl: a collection of 378 American Contract Air Mail flight covers (1980.0243).
- Naito Foundation (through Yuji Naito): 2 wrist watches (1980.0448).
- Government of The Netherlands, Netherlands Postal and Telecommunications Services (through A. W. Van Ommeren and J. D. Smeets): 12 mint postage stamps of The Netherlands (1979.0966).
- Mrs. Anna H. Newby: pickle dish with tongs and cut-glass container (1979.0800).
- Hayes A. Newby: Super-Marvel Violet Ray Kit (1979.0771).
- Ray F. Newman: 3 circus posters (1979.1137).
- New York & New Jersey Sandy Hook Pilots Association (through Thomas A. McGoldrick): 2 framed oil paintings of pilot boats *New Jersey* and *New York* (1980.0262).
- Niagara-Mohawk Power Corp.: tachometer used on dynamo in generating station (1979.0819).
- Jack Nicklaus: golf club used by donor (1979.0621).
- Government of Niue, Niue Post Office: 10 mint postage stamps, 7 mint souve-



- nir sheets, 6 used postage stamps, and 2 First Day covers, all of Niue (1979.0996).
- Norcross Company (through Alfred E. Hill and Jack L. Messman): greeting-card collection (1979.0333).
- North American Soccer League (through Robert J. Ehlinger): soccer uniforms from Pele, Rote, & Roth, and a soccer ball (1979.1059).
- Oberlin College (through James L. Powell): celestial globe and a sextant (1980.0075).
- Paul H. Oehser: war rationing book (1980.0264).
- John R. Ograin: cigar ring gauge (1979.0776).
- Richard O'Neill: direct vision spectroscope (1979.1180).
- International Union of Operating Engineers (through Reese Hammond): union documents and phonograph records including 15 receipts for dues, 2 petitions for membership, 2 booklets, 1 ledger, and 3 phonograph records (1979.0755).
- Bobby Orr: hockey skates and gloves used by the donor (1979.0634).
- Virginia Gunter Haas Orvis: silver card case owned by Letitia Christian Tyler, wife of President John Tyler (1980.0120).
- Hildegarde S. Ossi (in memory of Peter Anthony Ossi): 10 acetate-film designs for screen printing, 1 sample of wallpaper, 7 samples of printed fabric, 1 fragment of printed fabric, and 2 pieces of screening used in screen printing (1980.0015).
- Ralph Oswald: 3 membership cards for the International Union of Operating Engineers, 1 receipt for dues, and 10 membership books from 1939–75 (1979.0754).
- Harry E. Page: 1 lot of clapboards, c. 1780, from Durgin Farm in Henniker, New Hampshire (1979.0982).
- Arnold D. Palmer: Masters Tournament trophy, 1958–60 won by the donor (1979.0664).
- Paramount Television Productions (through Gary Nardino and Henry Winkler): brown leather jacket worn by "Fonzie" on the TV series "Happy Days" (1980.0094).
- Frank Paris: marionette puppet, "Princess Dancing Bear" (1980.0352).
- Lillian R. Parks: scarf marked "Margaret Truman," silver evening purse with Mrs. Truman's calling card inside, glass ashtray of Mrs. Eisenhower's, picture of Mrs. Eisenhower with the White House Staff, and a picture of the donor sewing (1979.0784).
- Marvin B. Patterson: woman's clothing items from 1964, including a 3-piece ensemble, a pair of shoes, and a purse (1979.0484).
- Harry Patton: table runner and set of 6 tablemats made of fabric from Szechuan province, China (1979.0210).
- M. L. Pearl: 2 nails from Roman legionary fortress of Inchtuthil, Perthshire (1979.0981).
- Pete Pedrolì: enamel cup (1980.0036).
- Martin L. Peller: a campaign leaflet "Why Choose Between Tweedle-Dee and Tweedle-Dum" (1980.0389).
- D. B. Perkins, Jr., and Virginia W. Perkins: 24 phonograph records (1979.1182).
- Martin J. A. Petersilia: Washington, D.C. City Council materials including buttons, flyers, and literature from 1978 (1979.0729); ration book case, ration books, small redish-brown envelope, and ration buttons (1979.0737); Republican campaign pamphlet, button, and lapel button from the 1920s and 1930s (1979.0788).
- Paul P. Petersilia: 2 inaugural vehicle passes from 1933 (1979.0751).
- Cornelia B. Peterson: silver and steel set of 12 knives and 12 forks in original case, eighteenth century (1978.2424).



Mendel L. Peterson: German center-fire 2-barrel pistol and a European center-fire 2-barrel pistol (1979.1075); 176 philatelic objects, including 31 US way-bills, 21 US photos and documents with revenue stamps, 59 US stampless covers, 31 US miscellaneous covers, and 34 foreign covers (1980.0251); 6 newspapers concerning the assassination of President John F. Kennedy (1979.1170); 7 political tokens (1979.1171).

The Karl E. Pfeiffer family (through Mary Clare Pfeiffer Vanderploeg and Elizabeth Pfeiffer Wilburn): ship's carpenter's tools and chest (1979.0929).

James A. Piper: campaign materials for various candidates for the District of Columbia City Council, 1976 (1979.0730).

Pittsburgh Pirates Baseball Team (through John W. Galbraith): Pittsburgh Pirates baseball items, including Wilver Stargell's uniform, a catcher's mask, a baseball bat, a base, and a pennant (1979.1020).

Pittsburgh Steelers Football Team (through Daniel M. Rooney): Pittsburgh Steelers Super Bowl material including Terry Bradshaw's football pants, jersey, socks, and shoes, Franco Harris's helmet, Joe Green's jersey, the football used in the 1980 Super Bowl game, a scrimmage marker, and a yard marker (1980.0131).

Paul J. Plishner: WW I spark gap transmitter (1979.1102).

Valena White Plisko: Poster, handout, and a tag from anti-war demonstrations (1979.0731).

Joan Pogson: T-shirt, "Alcoholism is a Woman's Issue" (1980.0149).

Henry Porter: 3 Kodak roll-film cameras, Minox subminiature camera, Ermanox plate camera, hand-held stereoscope by Underwood & Underwood, c. 1894, and a boxed set of 36 stereographs of the Grand Canyon (1977.0717).

Henry and Mark K. Porter: silver service, including hot water kettle, stand, burner, coffee pot, covered sugar bowl, waste bowl, teapot, and creamer (1980.0027).

Government of Portugal (through Direccio Geral de Correios): First Day cover, unused postal card, and a mint souvenir sheet, all of Portugal (1979.0957).

Potomac Electric Power Company (through Peter H. Benziger): fireless locomotive by Heisler Locomotive Works, made in 1938 (1979.1027).

Pravel, Gambrell, Hewitt, Kirk, Kimball, and Dodge: paper-bag machine, patented by Margaret E. Knight, Springfield, Massachusetts, October 28, 1879 (1980.0004).

Eunice B. Prellwitz: 4 WW I posters by Edith Mitchell Prellwitz (1980.0173).

Professional Insurers & Associates, Inc. (through Donald A. Newton): Friden Automatic Typewriter System, consisting of a Computyper 5610 and a Flexowriter 2205, with associated manuals (1979.0823).

Bradley Quinn: ski jumping helmet, c. 1934 (1979.0983).

Mary F. and Robert L. Raley: 2 side chairs, a bed, blanket chest, chest of drawers, cradle, roof tile, and a decorative tile (1980.0026).

Sylvia Raphael: information kit on voter registration by mail as implemented in Montgomery County, Maryland (1979.0748).

Edith D. Rawlett, in memory of Randolph M. Rawlett: framed certificate from the Georgetown Female Seminary, dated 1844 (1980.0077).

Ruth D. Ray: teaching machine consisting of one multitester and one poly-graph. Related documentation to the teaching machine and to a "rational learning machine" (1979.0853).

Edward J. Reiss: French pocket watch (1980.0423).

Mrs. Freda L. Reiter: 23 original drawings made by the donor for use on ABC TV News (1979.1113).

John Paul Remensnyder: 261 pieces of copper and brass objects (1980.0939).

Kenneth W. Rendell: lithograph of Abraham Lincoln (1980.0289).

Georgiana B. Rhine: collection of 32 hand molders' tools (1979.0899).

Dorothy M. Richardson: Cine-Kodak motion picture camera with leather carrying case, c. 1927 (1980.0124).

Judith A. Richardson: football program, Redskins vs. Giants, September 16, 1937 (1980.0301).

The Richton Jewelry Company, Inc. (through Gerry E. Hansen and Lois Beekman): 23 pieces of women's jewelry from 1974 (1979.0059).

John H. Rick: glass tube cutter and 3 glass tubes (1979.0857).

Leo Ring: 2 early labor union handbills (1979.0988).

Ringling Brothers, Barnum & Bailey Circus (through Irvin and Kenneth Feld): 3-piece costume worn by Gunther Gebel Williams, costume design drawing, circus poster, elephant hook, animal trainer's whip, elephant harness, and 8 circus programs (1980.0282).

Mary Livingston and S. Dillon Ripley: bell cord button (1979.0828).

Deborah Ritter: job rally materials from April 1975 (1979.0734).

Betty K. Harrison Roberts and John Alexander Roberts: handmade rake with curving handle (1980.0189).

The Robertson Corporation (through Charles R., Joe E. and Richard S. Robertson): middlings purifier and a roller mill (1980.0110).

Paulette Robischon, Ph.D., R.N.: Camp Fire Girl ceremonial gown and related items (1979.0378).

The Rogers Company (through Phillip R. Frable): pageant costumes (1980.0302).

Mrs. Alice Ross Rogers: silver spoon made on USS *Brandywine* in 1828 (1980.0312).

Henry H. Rogers: Liberian stamp collection and other philatelic objects (1980.0252).

Hazelle H. and J. Woodson Rollins: 6 marionettes, 2 rod puppets, 2 hand puppets, 3 posters, and a backdrop (1979.1164); minstrel marionette, c. 1860 (1979.0974).

Christopher Roney: Little Compton, Rhode Island, Little League uniform, including shirt, pants, and cap (1980.0127).

Ellen C. Roney: match book with legends "Vote for Repeal" and "Elect Al Smith" (1979.1169).

Margo Rose: "Howdy Doody" marionette used on the NBC TV show, 1947–60 (1980.0123).

John Rossel: collection of 155 electric razors (1977.0536).

David Rothman: *Time* magazine cover from July 1, 1946, *Newsweek* magazine from March 10, 1947, *Saturday Review* magazine from April 14, 1956, and *Newsday* newspaper from April 19, 1955 (1979.0808).

Roy's Orthopedic, Inc. (through John Ficociello and Raymond A. Hendrickson): 1 lower extremity artificial leg (1980.0320).

Pete Rozelle: photograph showing donor's installation as Commissioner of the National Football League, January 20, 1960 (1979.0535).

Rubin Brothers Waste Company (through Edward Rubin): 79 US Navy, Marine Corps and Coast Guard uniform items (1978.2481); US Navy Waves dress skirt, shorts, c. 1978, plus US Navy (Seabees) pillow case and seabag, c. WW II, and US Navy bell-bottom trousers, c. WW I (1980.0090).

Edwin Rubin: 16 US Navy Coast Guard, and US Marine Corps uniform items, WW II–1975 (1979.0767).

Gloria A. Rupp: Buck Jones cutout and a postcard of the Statue of Liberty (1980.0073).

William P. Rush (through Robert F. Wheeler): Leclanche-type cell battery (1979.0429).

William F. Russell: basketball presented to donor for 10,000 rebounds (1979.0622).

Curtis W. Sabrosky: Scrapbook with postcards (1980.0417).



Terry M. Sachs: metal slide rule, wooden slide rule, versalog slide rule instructions manual, three pamphlets on slide rules (1980.0097).

Marvin V. Sawyer, Jr.: collection of 412 glass insulators (1978.0246).

Francis B. Sayre, Jr., and Harriet Hart Sayre: Mandolin from the household of Woodrow Wilson with a leather case for the instrument and a leather case with 4 tortoise shell picks (1979.0757).

Dr. Albert Scaglione: 4 monoprints by Laszlo Dus (1979.1035).

Charles M. and Virginia A. Schaefer: brown derby, 1928 (1979.1036); furniture scarf (1979.0934).

Carl H. Scheele: sign, "Slow/Children Playing" (1980.0217); 79 phonograph records (1980.0314).

Martha Anne Scheele: pair of cheerleader's pompoms (1980.0224).

Freda K. Schiller: Autograph of Edgar Bergen and "Charlie," 1938 (1979.0623).

Carl Schlesinger: a collection of tools and material documenting the conversion of the *New York Times* from linotype to photocomposition (1980.0194).

Herman R. and Louise C. Schmitt: program and pass to the signing of the Versailles Peace Treaty, June 28, 1919 (1979.0832).

Mr. and Mrs. Walter Schnormeier: Dulcitone by Thomas Machell & Sons (1980.0041).

Joan Ellen Schulmen: batik-patterned silk wallhanging (1979.0209).

David Schwartz: shovel plow blade (1979.1045).

Catherine D. Scott: 8 early children's records (1979.1184).

Tom Seaver: "Trojans" baseball uniform worn in college by the donor (1979.0624).

Art Seitz: 2 Democratic State Committee letters, one dated 1867, the other dated 1868 (1980.0068).

E. Ray Shank: a collection of 3,108 plate number strips and blocks of the United States Christmas stamp, issue of 1969 (1980.0234).

Elisabeth and Matthew E. Sharpe: porcelain soup plate, "Tiger and Bamboo" pattern (1979.1151).

Jane Lin Shaw, in memory of Chen Yung Shaw (through Virginia Beets): button and leaflet supporting the normalization of relations between the US and the People's Republic of China (1979.0749).

David H. Shayt: yearbook, *The Reflector*, 1900 (1979.1183).

Caroline Shelden: 4 pairs of women's earrings (1979.0597).

Nina Silver: 2 women's movement buttons (1979.0191); 2 buttons, sheet music, and a printed page of lyrics from Bella Abzug's campaign for Mayor of New York City (1979.0750).

Vijai Pal Singh: 2 used postage stamps of British Central Africa, Scott nos. 68 and 69 (1980.0235).

Smith College (through Professor Bruce Hawkins): Spectroscope, double siren, theodolite, color standard transparency, and a set of glass vials in a leatherette case (1980.0098).

Julia Helen Smith: temperance leaflet W.C.T.U. (1979.0742).

Mrs. Loretta Thomsen Smith: 2 picture postcard albums (1980.0059).

Louise J. Smith: a collection of 462 US covers and postal stationery, and foreign covers, postal stationery and revenues on documents (1980.0398).

Eva Baumann Speciner: spoon with "Charlie McCarthy" handle (1979.0380).

Sports Illustrated (through Harry C. Rubicam): Greek amphora, c. 510 B.C. (1979.0696).

Dick Sprafke: 1 section of wooden water pipe (1980.0286).

Dorothy L. Squires: Electro-therapeutic machine contained in case (1980.0011).

Benjamin, Harvey G., and Norman Stack: US Trade Dollar, 1884 (1979.0979).

Stanford Linear Accelerator Center (through Eugene B. Rickansrud): SLAC section, SLAC klystron, and SPEAR vacuum section (1980.0177).



George B. Stanford: No. 1 folding Buster Brown camera (1980.0142).

Edna L. Stantial: women's history and suffrage materials (1979.0939).

Daniel P. Stanton: US Navy enlisted man's white uniform hat, worn by the donor (1979.0449).

Dr. Frank Stanton: radio receiver (1979.1269).

Ann Pendleton Stephens and Timothy T. Stephens: sports material used by T. T. Pendleton in his high school and college careers (1979.0984).

Richard Stevenson: 2 copies of a limited edition, philatelic/numismatic cover postmarked September 5, 1974, in commemoration of the First Continental Congress (1980.0436).

Dr. Alexander Stewart: 2 obstetrical forceps (1980.0109).

Jackie Stewart: crash helmet used by the donor (1979.0537).

Janet Newbold Stewart: silver tankard by Elias Pelletreau (1979.1142).

Leslie J. Stewart: hair twister, iron needle, iron awl, and 2 gauges (1979.0253).

Todd W. Stockman: ventriloquist figure, "Shaun," made from Charlie McCarthy doll (1980.0401).

J. & H. Stolow, Inc. (through Julius Stolow): worldwide collection of 102,182 philatelic objects, including mint and used postage stamps, souvenir sheets, proofs, first day covers, and special cancellation covers (1979.0941).

Milton Story: Presidential campaign objects, including letters, placemat cases, caps, banners, window stickers, badges, auto attachments, coins, etc. (1979.0582).

Lewis H. Strauss: political memorabilia including the pen used by President Eisenhower to sign Atomic Energy Act, silver box "R. N. Associates 1968," place card for Dirksen dinner in 1965, small ivory elephant, large jade elephant, Richard Nixon gold pen and holder, glass paperweight from Secretaries Conference in 1955, glass cigarette box given to the donor for appearing on "Face The Nation" on August 28, 1955, Herbert Hoover Presidential Medal, and the fountain pen used to sign the final Armistice Agreement in Brussels on March 14, 1919 (1979.0657); woman's bag and coin purse, c. 1895 (1979.0668); circular slide rule (1979.0816).

Bill D. Stribling: surveyor's compass (1979.0770).

Opal E. Stykemain: mid-nineteenth-century German dye manual, document, sample books, and folder (1979.0714).

Richard L. Sutton, Jr.: 12-place Underwood Olivetti printing calculator with instruction manual (1979.0854).

John H. Swafford: radio transceiver (1979.1219).

Government of Sweden, General Directorate of Posts (through Nils Horjel): 150 mint postage stamps, 56 First Day covers, 20 mint unexplored booklets, and 5 mint souvenir sheets, all of Sweden (1979.0994).

Swiss-Bernina, Inc. (through Ray Dancer): sewing machine model 830 (1979.0721).

Hans Syz: Meissen stoneware teapot and cup (1980.0024).

Taiwan Directorate General of Posts (through Y. C. Shih and Ay Wang): ROCPEX TAIPEI medal and plaque (1980.0244).

James L. Taylor: 51 phonograph records of popular music (1979.0954).

Clifford M. Templeman: Japanese silk flag captured in Philippines near Manila during WW II (1980.0054).

Dr. Albert E. Thill: 1 card and 2 handouts related to Eugene McCarthy's Presidential Campaign (1980.0388).

Dr. Russell J. Thomsen: a Fuller and Johnson Gasoline Engine (1980.0350).

Douglas F. Thomson: charter and seal of the American Lodge of Free Gardeners, 1889 (1979.0625).

Robert Wilson Timmerman: collection of 113 blueprints made on linen showing the construction of a 50-million-gallon pumping engine (1980.0081).

Mary V. Tracy: anti-abortion and anti-ERA buttons (1979.0761); anti-ERA materials including brochures, posters, a handout, and a newsletter (1979.0762).

Laura M. Trexler: 2 men's hats, 1 men's hat box, 6 women's hats, 1 women's sunbonnet, 1 women's dress, 1 boy's hat, 1 girl's hat, and 1 pair of girl's stockings (1979.0077); cotton feather-tick cover (1979.0715); 2 painted window screens (1980.0193).

Thomas N. Tully: certificate of Apprenticeship, diploma from the Joint Carpentry Apprenticeship Committee of Washington, D.C. and Vicinity, Journeyman's certificate from United Brotherhood of Carpenters & Joiners of America—all to Thomas Tully—a hard hat, and a lapel pin from the United Brotherhood of Carpenters and Joiners of America (1979.0924); an arm patch with Stuart's portrait of George Washington (1980.0390).

Lillian and Milton Turner: portrait of Albert Einstein by F. R. Petrie (1979.1026).

Carl C. Twigg, Jr.: 3 tin cans—Great American Cinnamon, R & S Crystallized Oriental Ginger, and Herald Brand Crystallized Ginger (1980.0061).

United Mine Workers of America (through Willard A. Esselstyn): Norge electric washing machine (1979.0416).

United Nations Postal Administration (through Ole Hamann): 798 mint postage stamps and 12 used postage stamps, all of the United Nations (1979.0971).

United States Steel Corporation (through Arthur B. Wilden): 2 samples of Arc Weld Line pipe (314543).

US Department of Defense, Department of the Army, The Chief of Military History and the Center of Military History: 57 US Marine Corps and US Navy utility uniform items (1979.0766).

US Department of Defense, Department of the Army, Property Disposal Office: New England pleasure cart (1980.0163).

US Department of Defense, Department of the Navy, Naval Historical Center, Navy Memorial Museum (through Comdr. T. A. Damon): calculating machine (1979.0602).

US Department of Defense, Department of the Navy, David W. Taylor Naval Ship Research and Development Center: A miscellaneous collection of strain gauges, indicators, flex bar specimens, a voltmeter and a milliampmeter (1980.0047).

US Department of Defense, Department of the Navy, Naval Surface Weapons Center: Scaler-analyzer Model 128 SN101 (1979.0643).

US Department of Defense, Department of the Navy, United States Marine Corps, US Marine Corps Museum: 7 pairs of WW II US Marine Corps field shoes (1980.0411).

US Department of Health, Education, and Welfare, National Institutes of Health: Recording spectrophotometer and a power supply (1979.1224).

US Department of Health, Education and Welfare, Public Health Service: 3 glass bottles from Boston Marine Hospital, c. 1880; diphtheria antitoxin, sealed bottle, 1895; microscope, Carl Zeiss, Jena, with case; epaulettes in black Japaned metal box; uniform, US Public Health Service Medical Officer, Captain; instrument case with brass inset; brass ship's bell, c. 1893; ship model, Coast Guard cutter USS Bear; flag from quarantine launches, c. 1890s (1980.0349).

US Department of Justice, US Marshals Service: 6 slot machines (1979.0859).

US Department of the Treasury, Bureau of Engraving and Printing (through Harry Clements): 175 certified plate proof sheets of US postage stamps and souvenir sheets (1979.0906); 101 certified plate proof sheets of US postage stamps (1979.0921).

US Department of the Treasury, Office of Administrative Programs, Facilities Services Division, Communications and Records Management Branch



- (through Sarah J. Allen): WW II Allied Military Government materials including 123 unexplored booklets of stamps, 48 regular stamps, and 2 Bureau of Engraving and Printing models for stamps used in Japan (1980.0001).
- US Federal Reserve System, Federal Reserve Bank of New York: smoke density gauge, steam gauge, and injector (1979.1248).
- US General Services Administration, National Archives and Records Service, Records Disposition Division: Broadside titled, "A Resolution that the first Wednesday in January next be the day for appointing electors in the several states," dated September 13, 1788 (1980.0118).
- US General Services Administration, Office Machine Shop (through David Horn): bookkeeping machine (1978.2371).
- US Legislative Branch, Library of Congress: sterling silver tumbler inscribed, "96 District to P.A. Linton" and "Sumner vs. Brooks" (1979.1209).
- US Legislative Branch, Library of Congress (through John C. Broderick): an accumulation of US and foreign philatelic items (1979.0778).
- US Panama Canal Company (through Thomas C. Duty): collection of 719 glass negatives, c. 1903–late 1930s (1979.0543).
- US Postal Service, Customer Services Department, Stamp Management Branch (through James R. Williams): 6 American commemorative stamp panels (3 copies each) (1979.0963); Commemorative souvenir pages of US postage stamps (1979.0964); 71 mint US postage stamps, 20 unused US postal stationery, 9 unused US postal cards, and 6 commemorative US stamp panels (1979.0965).
- US Postal Service, Office of International Postal Affairs, International Relations Branch (through Michael J. Regan): 32 mint postage stamps of Venezuela (1979.0958); 170 mint postage stamps of Japan (1979.0959); 40 mint postage stamps of Japan, 10 mint souvenir sheets of Japan, 38 mint postage stamps of Spain, and 6 mint postage stamps of Andorra (1979.0960); 55 mint postage stamps of Spain (1979.0961); 64 mint postage stamps of Gurnsey (1979.0962); 506 mint postage stamps and 2 mint souvenir sheets of Spain, 44 mint postage stamps of Spanish Sahara, and mint postage stamps from Andorra, Fernanco Poo, Ifni and Rio Muni (1979.0972); collection of mint postage stamps and souvenir sheets of China (1979.0973).
- Frank A. Van Riper: 2 badges and a button from the 1976 Republican and Democratic Conventions (1980.0048).
- Emma Prosperi Vantine: ledger of John Francis Prosperi (1890–1923), Washington, D.C., musician (1980.0114).
- Vassar College (through Virginia B. Smith): transit, position micrometer, sextant, orrery, reciprocating armature engine, Page's revolving magnet, set of glass bottles in leatherette case, microscope, position micrometer in mahogany case, and a bolometer (1980.0318).
- Pamela N. Violante: bumper sticker, "ERA / No Time Limit on Equality" (1979.0747).
- Robert M. Vogel: hand sewing machine, c. 1968 (1979.0842); 1 lithographic print of Harper's Ferry, Virginia (1980.0238); poster, *From Cradle To The Grave*, shows reflective scenes and incidents in the life of James A. Garfield (1980.0267); lined tablet with likeness of Herbert Hoover, drawing of the Capitol and the White House, and the legend "President" (1979.1168).
- Josephine M. Waggaman: waistcoat fragment, c. 1860 (1979.0935).
- Richard B. and Goldie Waghalter: 5 engravings by Chaim Goldberg (1980.0005).
- Roy E. Wagner in memory of Susan Brown Wagner: diploma from the Lexington Female College, June 1869 (1980.0121). Counterpane of hand-woven tufted cotton (1979.0795).



A. Gayle and Frances E. Waldrop: collection of photomechanical prints and personal memorabilia belonging to John W. Osborne (1980.0310).

Charles Lynn Walker: water-polo ball, booklet, "Water Polo Rules," and a swimming trophy awarded to the donor in 1959 (1970.0987).

Susan N. Wallace: 1 banner, "Pittsburgh Committee for Human Rights" (1979.0746).

George L. Walling: surveyor's vernier compass, Jacob's staff, and a surveyor's chain (1979.0769).

Mr. and Mrs. Melvin E. Walter, Sr.: carpenter's tools and tool chest (1979.0797).

C. Malcolm Watkins: 3 side chairs (1979.1253).

Joan Pearson Watkins: iron teakettle with lid, c. 1800 (1979.1136).

Mrs. Helen E. Weber: women's clothing items, including 2 pairs of shoes, 2 2-piece suits, 2 blouses, a wedding dress, and 2 skeins of yarn (1979.0551).

Welch Allyn, Inc. (through Lew F. Allyn): diagnostic set consisting of 8 instruments in a leather case (1980.0176).

John T. Welch: IBM card verifier (1979.0931).

Francis Welsh: supermarket grocery bag with likenesses of the presidents from Washington through Johnson with a blank space for the president elected in 1964 (1979.1167).

Wayne R. Wentland: campaign thimble, La Follette and Wheeler, 1924 (1979.0951).

Thomas F. Wert: molder's corner-working tool (314500).

Clarence A. West: transdipper (1979.0474).

Western Electric (through W. G. Corgan): diamond die drilling laser (1978.2210).

George K. Wetterau: sled, "Flexible Flyer Racer" made in 1925 (1980.0091).

City of Wheeling, West Virginia (through Mr. Frank Rodriguez and Mr. R. Clark Morton): components of 3 Fink trusses removed from B&O Railroad freight depot, Wheeling, West Virginia, 1853 (1979.0544).

Gloria Whipple: objects relating to the Michigan Women's Equality Day, 1974, including minutes, brochures, plastic bags, reports, fact sheets, membership lists, newspaper articles, biographies, posters, and literature (1979.0775).

White City Elementary School (through Nancy Rinabarger): 5 puppets, 7 greeting cards, and a paper doll (1979.1153).

John H. White, Jr.: William Earle Geoghegan educational materials, including a certificate from the Baltimore Grammar School, diploma from the Maryland Institute for the Promotion of the Mechanic Arts, and 2 report books (1980.0336).

Robert White: Spiro Agnew T-shirt (1980.0148); movie artifacts, including 3 phonograph records, 5 comic books, and 2 souvenir books (1980.0202).

Charles A. Whitmer: Republican campaign song, presidential album containing facts relative to campaigns, and "The Ladies' Note-Book and Calendar" (1979.0942).

Grace B. Wiegand: manual, *How To Construct a Four Tube T.R.F. Receiver*, audio-visual set with filmstrips and phonograph record, "Fundamentals of Transistor Electronics," and an audio-visual set with filmstrips and phonograph record, "Understanding Electricity" (1979.0200).

Audrey Wiese: linen cloth with embroidered netting border (1979.0713).

Constance R. and Thomas D. Williams: pewter beaker and a pewter haystack measure (1979.0815).

Dorothy Cox Williams: women's clothing items including 2 blouses, 2 skirts, and a petticoat (1977.1071).

Scott Willingham: pair of ballet-model skis used by the donor (1979.0986).

Abby S. and Marguerite Kotwitz Willowroot: 20 pieces of sterling silver feminist jewelry (1979.0744).

Mrs. J. Walter Wilson (through Elizabeth H. Leduc): assortment of 25 toy spinning-tops from the nineteenth and mid-twentieth centuries (1979.0628).  
 Laurence C. Witten II: 2 violins, a viola, and a guitar (1979.0647).  
 Wittenberg University (through Dr. M. Paul Hagelberg): set of 3 Pascal's vases and Queen air pump (1979.1202).  
 Worcester Aid to Children (through Charlene Key Sokal): ethyl chloride tube, surgical needle set in leatherette case, and a leatherette case containing 12 glass tubes (1979.1077).  
 Wunsch-Americanana Foundation: Chippendale-style side chair, Lancaster Pennsylvania, c. 1770 (1978.2455).  
 Elwin S. Wyman: knitting machine accessory (1980.0329).  
 Carl Yastrzemski: baseball batting-helmet used by the donor (1979.0540).  
 Lillian Freeda Zimmerman and Philip W. Zimmerman: collection of 16 pharmaceutical and related items (1980.0429).

## NATIONAL PORTRAIT GALLERY

### *Donors of Financial Support*

Antiquarian Society of Montgomery, Alabama	Newport Historical Society
The Barra Foundation, Inc.	Old Stone Bank Charitable Foundation
Mr. David P. Becker	Outlet Company
Mrs. Malcolm G. Chace, Jr.	Redwood Library and Athenaeum
Mr. Thomas M. Evans	The Rhode Island Historical Society
Estate of David E. Finley	Marvin Sadik
Kent-Lucas Foundation, Inc.	Charles Simon
Mrs. Kathleen Scofield Louchheim	C. G. Sloan & Co., Inc.
The Ambrose Monell Foundation	Textron, Inc.
Philip Morris Incorporated	Mrs. Barbara Tuchman
	Catharine Morris Wright

### *Donors to the Collections*

The Mildred Andrews Fund	Mrs. Katie Louchheim
David P. Becker	Paul Mellon
Chanler A. Chapman	A. M. Miller III
Mrs. James Bryant Conant	David A. Morse
Mr. and Mrs. Timothy J. Desmond	Joan Murray
Mrs. Charles Dunn	The National Geographic Society
Norman Evans	John O'Brien
Benedict J. Fernandez	Ms. Daren Pierce
Freer Gallery of Art	Peter G. Powers
The Margaret Hall Foundation	Raymond H. Schettler
Paul Horgan	John Seeyle
Murray Lebwohl	Mrs. Helen Farr Sloan
Mr. and Mrs. Blair Lee III	The John Sloan Memorial
Mrs. Tyson Lee	Foundation
Wilmarth Sheldon Lewis	Mrs. Varina Webb Stewart
(by bequest)	Mrs. William W. Thompson
Levi Hood Lodge of the BPOE of	Mrs. Robert C. L. Timpson
West Chester, Pennsylvania	Joel A. H. Webb
George C. Lodge	Frederick S. Wight
Henry Cabot Lodge	John Wilmerding

## OFFICE OF AMERICAN AND FOLKLIFE STUDIES

### *Donors to the Folklife Program*

Music Performance Trust Fund	The Department of Energy
------------------------------	--------------------------

## MUSEUM PROGRAMS

### OFFICE OF MUSEUM PROGRAMS

#### *Donors of Financial Support*

Corning Glass Works Foundation  
International Communication Agency  
*Reader's Digest*

Mr. and Mrs. Vernon Taylor  
United States Department of Labor/  
Arts Partnership

### SMITHSONIAN INSTITUTION ARCHIVES

#### *Donors to the Collections*

#### INDIVIDUALS

Shirley Briggs: the papers of Paul Bartsch.  
Riccardo Giacconi: the papers of Riccardo Giacconi.  
Mrs. Floyd A. McClure: the papers of Floyd A. McClure.  
Dan H. Nicolson: the papers of Dan H. Nicolson.  
Watson M. Perrygo: the papers of Watson M. Perrygo; taped reminiscences.  
Kjell Sandved: photograph collection.  
Doris H. Speirs: the papers of Margaret M. Nice.  
Egbert H. Walker: the papers of Egbert H. Walker.  
Mrs. Alexander Wetmore: the papers of Alexander Wetmore.  
Mrs. F. H. Wright: meteorologist records.  
John H. White, Jr.: the papers of John H. White, Jr.

#### INSTITUTIONAL

American Ornithologists' Union: the records of the Union.  
American Society of Ichthyologists and Herpetologists: the records of the Society.  
Society of Systematic Zoology: the records of the Society.

### SMITHSONIAN INSTITUTION LIBRARIES

#### *Donors to the Collection*

Auckland Art Museum: 5 exhibition catalogues.  
William H. Allen: 76 aviation journals.  
Mrs. Leslie Avery: 7 volumes on glass bottles.  
Louis S. Ballif: *Amaltheum Poeticum et Historicum*, 1639.  
Alice Baldwin Beer: 200 journals.  
Charles G. Berger: *The Dolls' House*.  
Don Berliner: 12 volumes of *Wings of the Mother Land*.  
M. H. Bigelow: *Pharmacopoeia Officinalis*, by John Quincy, 1736.  
Faber Birren: Facsimile of LeBlon, J. C., *Coloritto*, 1980.  
Robert H. Blankemeyer: 3 volumes of *Storz Instruments* catalogues.  
Frank H. Blumenthal: 45 issues of *Airpost Journal*.  
Daniel Boorstin: 30 monographs; 60 journals.  
Edward Botwin: 25 items.  
Mrs. Kay Brick: 36 issues of *Jug Letter*.  
R. N. Brown: 3 copies of Biotopes of the Western Arabian Gulf.  
William Bunce: 15 books.  
Mrs. Lester Cahn: 11 exhibition catalogues.  
Edgar Cave: 54 cartons of decorative arts books, journals.  
Centro de Arte y Comunicacion: 25 publications.



Mrs. William Sloane Coffin: *Catalogue of the Collection of George and Florence Blumenthal*, 6 vols., Paris, 1926–30.  
 Dr. Daniel Cohen: 25 journals on marine life.  
 Herbert Collins: *Mint Museum Antiques Show*, 1979.  
 Mrs. Lester Cooke: 39 books, charts, and magazines.  
 G. Arthur Cooper: *Hawaii's Birds*, by the Hawaii Audubon Society, 1978.  
 David Correll: *Chemical Abstracts; Biochemical Sections*, vols. 56–88.  
 Rael and Evelyn Cowan: 5 cabinets of picture collection material.  
 Owen Darcey: 7 issues and index of *Douglas Services*.  
 Elaine Evans Dee: 15 exhibition catalogues, books.  
 Kathy DeRiemer: 4 titles.  
 Linda Dinsmore: 4 aircraft monographs.  
 Embassy of Spain: 2 monographs.  
 John Ewers: 44 journal issues.  
 Richard Eyde: *Polyploidy, Biological Relevance*, 1980.  
 Gertrude Fehl: 29 photographs.  
 Lucy Fellows: 27 exhibition catalogues.  
 Roger Ferriter: 126 type books.  
 Kurt Fredriksson: 7 monographs.  
 R. H. Gagner: Nancy McClelland archival material.  
 Gallery Association of New York State: 10 exhibition catalogues.  
 Felix Geiger: 6 volumes of Los Alamos University lectures.  
 Dorothy Globus: 19 pictures.  
 Hugh Goodhue: 2 items by and associated with Bertram Grosvenor Goodhue.  
 Mrs. Marion Goodman: nineteenth-century books and journals.  
 Jack Goodwin: *Early Road Location*, 1980.  
 Paris Grand Palais: 4 exhibition catalogues.  
 Woodtli R. Grandin: 12 volumes of medical books.  
 Fred Graves: 6 books.  
 James Austin Hanson: *The Mountain Man's Sketch Book*, by donor, 2 volumes.  
 Paul F. Hart: 6 volumes of *American Reference Library*, 1900.  
 Dr. Leroy Harvey: 100 botanical titles.  
 E. P. Henderson: 4 volumes.  
 Tom Hitchcock: 3 volumes of *Monograph Close-up*.  
 James Hobbins: 48 issues of *Journal of American History*, 1967–1979.  
 Hoikusha Publishing Company: *Coloured Illustrations of Woody Plants of Japan*.  
 Harrison Hull: 9 volumes.  
 Helen J. Hutchinson: *Art of Natural History*, by S. Peter Dance, 1978.  
 Jesse Johnson: 7 monographs.  
 Claire Kach: collection of books on needlework.  
 D. Karshan: 9 cartons of books, journals.  
 Erle B. Kauffman: 7 monographs.  
 Bob Kaufmann: 21 books, journals.  
 Kennedy Galleries: 21 exhibition catalogues.  
 Mrs. Jessica Kennedy: 9 Brunschwig & Fils. press kits.  
 Roman Kenk: 23 issues of *Worm Runners' Journals*.  
 Warren King: *Fauna Republicii Socialiste Romania: Aves*, vol. 15, fasc. 1, 1978.  
 Larry Korwin: 16 color slides on banners.  
 Dr. Karl Krombein: 8 volumes.  
 Clem Labine: complete back run of *Old House Journal*.  
 T. C. Lacey: 22 volumes.  
 Harry Ladd: 2 volumes.  
 Leo Lerman: 32 cartons of magazines, auction catalogues, books, invitations, and pictures.

Amy Levin: *Proceedings of the Geoscience Information Society*, volume 9, 1979.

Betty Lilienfield: 5 sales catalogues.

Dr. Elbert L. Little: *The Audubon Society Field Guide to North American Trees*, 1980.

Mary Jean Madigan: lifetime subscription to *Art & Antiques*.

Dr. Robert Maloy: "Speculum" and "Papers" of the Bibliographical Society of America.

Dr. Maurice Margulies: 6 volumes of *Photosynthetica*.

Dr. Claire Marton: 11 volumes.

Dr. Brian Mason: 11 volumes.

David McFadden: sales catalogue.

John J. C. McLaughlin: P. J. Shaw *An Old York Church . . . 1908*.

Dr. James Mead: 6 volumes.

Dr. W. G. Melson: 2 volumes.

Pauline Metcalf: 39 magazines and exhibition catalogues.

Casilear Middleton: 3 volumes.

Robert C. Mikesch: 135 journal issues.

Robert V. Miller: 9 volumes.

Monogram Aviation Publications: 5 volumes.

Patricia Moore: 6 volumes.

Willfred Gibbs Moore: 42 monographs.

National Museum of Art, Osaka: 6 exhibition catalogues.

Harry P. Nicholas: *Naval Disasters*, 1813.

Mike O'Daniel: 10 volumes of *International Library of Afro-American Life and History*.

Richard Oliver: 4 exhibition catalogues.

Dr. Storrs Olson: *Les Oiseaux du Chili*, by Emile Housse, 1948.

Frank D. Orifici: 16 issues of *Impact Confidential*.

Mrs. Augustus G. Paine: *Collection of the Dresses of Different Nations*, by Thomas Jeffreys, 2 vols., 1757.

Horace W. Parsons: *Ordo Institutionum Physicarum*, by Tho Rutherford, 1756.

Mrs. Jefferson Patterson: 190 volumes.

Richard E. Petit: 23 volumes of *Dictionnaire Universal d'Histoire Naturelle*, 1847.

John H. Phipps: 53 monographs including *de Toerakos*.

Mary W. Phillips: 6 magazines and books.

Pierre Matisse Gallery: 6 exhibition catalogues.

Glenn R. Polston: *The Okavango River*, 1861.

Mildred D. Raitt: *Popes Creek Plantation: Birthplace of George Washington*, 1979.

Mr. and Mrs. Henry Rau: 80 monographs and 50 pamphlets on Wedgewood.

Dr. Clayton Ray: 2 volumes.

Jacqueline Rea: 2 books.

Dr. Nathan Reingold: Joseph Henry Library author and key-work index.

Oscar W. Richards: 29 books and antiquarian dealer catalogues.

Dr. and Mrs. S. Dillon Ripley: *Monography of the Genus Camellia*, by Abbe Lorenzo Berlese, 1838.

Christian Rohlfing: 1 book.

Mrs. Marion Ross: 9 volumes of children's books.

Emily Rudin: 3 volumes of *Research Problems in Biology*.

Ernesto Salazar: 3 volumes.

Kjell Sandved: *Rain Forests and Cloud Forests*, by donor, 1979.

Frederic Saunier: 2 books, slides.

Margaret Sealor: 138 volumes.

Marc Scott: pictures.  
 Mrs. Celia Siegel and H. Rapin: *La Sculpture Decorative Moderne*.  
 Sheila and Timmy Smith: 4 books.  
 Dr. I. Gregory Sohn: 50 volumes.  
 Milton Sondag: 1 exhibition catalogue.  
 Norman Stack: 4 volumes.  
 Dr. T. Dale Stewart: 22 issues of *Journals of Forensic Sciences*.  
 Lorraine Suskind: 24 volumes.  
 Mr. and Mrs. Radoslav Sutnar: 280 books.  
 Lisa Taylor: 12 pictures.  
 Mabel Thurlwell: *Abbildungen Naturhistorischer Gegenstände in Hinsicht . . .*  
     1793.  
 Time-Life Books: 10 volumes.  
 Mrs. Arthur Ufland: 30 books.  
 Hans L. Waehler: 8 magazines.  
 Dr. Ronald Ward: 18 volumes on insects.  
 C. Malcolm Watkins: *Potters: Their Arts and Crafts*, by John C. Sparkes, 1897.  
 Dr. George Watson: *Peregrine Falcon—Eastern Population* and "Report" of  
     the Bird Migration Research Center, 1978.  
 June C. Wayne: 15 books.  
 Gertrude Weinberger: 11 drawers of Picture Library material.  
 Voolmar Wentzel: 3 volumes.  
 Helene Weiss: stained-glass books, journals, postcards.  
 Marlis Wienert: *Kasseler Porzellan*, by donor, 1980.  
 Russell Wilcox: 9 volumes of *The Keystone*.  
 Frederick Winship: 280 auction catalogues.  
 Frank Winter: 4 volumes.  
 Mrs. Donald Wood: nineteenth-century material, including missing volumes of  
     *Godey's* and *Petersons*.

## PUBLIC SERVICE

### DIVISION OF PERFORMING ARTS

#### *Donors of Financial Support*

Alpha Xi Delta Foundation  
 Gold Metal Products Co.  
 Outdoor Amusement Business Association, Inc.  
 Showmans League of America  
 Women's Committee of the Smithsonian Institution

### OFFICE OF ELEMENTARY AND SECONDARY EDUCATION

#### *Donor of Financial Support*

Morris and Gwendolyn Cafritz Foundation

### OFFICE OF SMITHSONIAN SYMPOSIA AND SEMINARS

#### *Donors of Financial Support*

Anonymous	Joseph H. Hazen Foundation, Inc.
I. U. International	The Rockefeller Foundation



## MEMBERSHIP AND DEVELOPMENT

### *SMITHSONIAN RESIDENT ASSOCIATE PROGRAM*

#### *Donors of Financial Support*

National Endowment for the Humanities and National Endowment for the Arts: granted funds through the Belgian American Educational Foundation for the Program's participation in the international symposium, "Belgium Today," April 20–May 31, 1980.

National Science Foundation: granted funds for a seven-week series of free public lectures on energy, "Future Power," Oct. 2–Nov. 13, 1979.

Smithsonian Women's Committee: partial funding for the Free Film Theater.

## JOHN F. KENNEDY CENTER FOR THE PERFORMING ARTS

### *Donors of Support to the 1980 Corporate Fund*

#### CORPORATE LEADERSHIP CIRCLE

American Telephone and Telegraph Company  
Atlantic Richfield Foundation  
Conoco, Inc.  
Exxon Corporation  
General Foods Corporation

International Business Machines Corporation  
Mobil Foundation, Inc.  
The Prudential Foundation  
Revlon Foundation, Inc.  
Standard Oil Company (Indiana)

#### CORPORATE PATRONS

CBS Inc.  
Champion International Corporation  
R. J. Reynolds Industries, Inc.  
Texaco Philanthropic Foundation Inc.

Time, Inc.  
United States Steel Foundation, Inc.  
The Xerox Foundation

#### CORPORATE SPONSORS

Alcoa Foundation  
Allied Chemical Foundation  
Anheuser-Busch Foundation  
Bethlehem Steel Corporation  
The Chase Manhattan Bank  
Coastal States Gas Corporation  
The Coca-Cola Company  
E. I. Dupont De Nemours & Company, Inc.  
Ford Motor Company Fund  
General Electric Company  
General Motors Foundation, Inc.  
Gulf Oil Corporation

Johnson & Johnson Associated Industries Fund  
The Merck Company Foundation  
Philip Morris Inc.  
NCR Corporation  
Occidental Petroleum Corporation  
Price Waterhouse & Company  
The Procter & Gamble Fund  
Raytheon Company  
Sears, Roebuck & Company  
Tenneco Inc.  
The Washington Post Company

#### CORPORATE DONORS

Allis-Chalmers Foundation, Inc.  
The Allstate Foundation  
American Broadcasting Company  
American Can Company Foundation

American Express Company  
American Security Bank, N.A.  
BankAmerica Foundation  
Bechtel Power Corporation

Bristol-Myers Fund  
 Burroughs Corporation  
 The C & P Telephone Company  
 Caterpillar Tractor Company  
 Celanese Corporation  
 CIBA-GEIGY  
 Citibank, N.A.  
 COMSAT  
 Consolidated Petroleum Industries,  
 Inc.  
 The Continental Group Foundation  
 Corning Glass Works Foundation  
 Dart Industries, Inc.  
 John Deere Foundation  
 Deloitte Haskins & Sells  
 Dow Corning Corporation  
 Dresser Industries Inc.  
 The Dun & Bradstreet Corporation  
 Foundation  
 Eastman Kodak Company  
 Federal National Mortgage  
 Association  
 Foremost-McKesson Foundation,  
 Inc.  
 General Dynamics  
 Getty Oil Company  
 Gould Foundation  
 Grace Foundation  
 John Hancock Mutual Life Insurance  
 Company  
 Harris Foundation  
 International Harvester Foundation  
 International Paper Company  
 Foundation  
 International Telephone and  
 Telegraph Corporation  
 Johns-Manville Fund, Inc.  
 Johnson & Higgins  
 The Johnson's Wax Fund, Inc.  
 The Joyce Foundation  
 Kimberly-Clark Foundation, Inc.

Kraft, Inc.  
 Levi-Strauss Foundation  
 Lincoln National Corporation  
 Martin Marietta  
 The McGraw-Hill Foundation Inc.  
 Merrill Lynch Pierce Fenner &  
 Smith Foundation  
 Metropolitan Life Foundation  
 The National Bank of Washington  
 National Geographic Society  
 Norton Simon, Inc.  
 Peat, Marwick, Mitchell & Company  
 J. C. Penney Company, Inc.  
 The Pfizer Foundation, Inc.  
 Phelps-Dodge Industries Inc.  
 Pitney Bowes  
 Potomac Electric Power Company  
 Reader's Digest Association, Inc.  
 Reynolds Metals Company  
 Foundation  
 The Riggs National Bank of  
 Washington, D.C.  
 St. Regis Paper Company  
 Schlumberger Horizons, Inc.  
 Security Pacific Charitable  
 Foundation  
 Charles E. Smith Companies  
 Sperry Corporation  
 Standard Brands, Inc.  
 The Standard Oil Company of  
 Ohio  
 Sun Company, Inc.  
 TRW Foundation  
 The Times-Mirror Foundation  
 Toyota Motor Sales, U.S.A., Inc.  
 Union Carbide Corporation  
 Union Pacific Foundation  
 United Technologies  
 Wells Fargo Foundation  
 Wheelabrator Foundation, Inc.  
 Woodward & Lothrop, Inc.

#### CORPORATE CONTRIBUTORS

AMF Foundation  
 Acacia Mutual Life  
 American Airlines  
 Ashland Oil Inc.  
 AVCO Corporation  
 Black, Starr & Frost, Ltd.  
 The Boeing Company  
 Cabot Corporation Foundation, Inc.  
 Campbell Soup Fund  
 Chesebrough-Pond's Inc.  
 Chevy Chase Savings & Loan, Inc.  
 Cities Service Foundation

The Continental Corporation  
 Foundation  
 Cooper Industries Foundation  
 CPC International Inc.  
 Dan River Foundation  
 Dayco Charitable Foundation, Inc.  
 Eli Lilly & Company Foundation  
 Emerson Charitable Trust  
 Equitable Life Insurance Company  
 Ethyl Corporation  
 Garfinckel, Brooks Brothers, Miller  
 & Rhoads, Inc.

General Telephone & Electronics  
 Corporation  
 Giant Food Foundation, Inc.  
 G. K. Technologies Foundation, Inc.  
 Goldman, Sachs & Company  
 Government Employees Insurance  
 Corporation of America  
 Halliburton Company  
 The Sidney L. Hechinger Foundation  
 The Hecht Company  
 H. J. Heinz II Charitable & Family  
 Trust  
 Hospital Corporation of America  
 Huntington T. Block Insurance  
 Edward F. Hutton Foundation  
 The Kiplinger Foundation, Inc.  
 Lazard Freres & Company  
 Lever Brothers Foundation, Inc.  
 Liberty National Bank & Trust  
 Company  
 I. Magnin  
 Mapco Inc.  
 Mars Foundation  
 Marsteller Foundation

Montgomery Ward Foundation  
 National Broadcasting Company, Inc.  
 National Permanent Federal Savings  
 & Loan Association  
 National Savings & Trust  
 National Steel Corporation  
 New York Community Trust  
 New York Life Insurance Company  
 People's Drug Stores, Inc.  
 Phillips Petroleum Company  
 Reading & Bates Corporation  
 Safeway Insurance Company  
 Safeway Stores, Inc.  
 Mary Horner Stuart Foundation  
 Suburban Trust Company  
 Technicolor Inc.  
 J. Walter Thompson Company  
 Fund Inc.  
 Trans Union Corporation  
 U.S. Air  
 U.S. News & World Report  
 Western Electric Fund  
 Weyerhaeuser Company Foundation  
 The Young & Rubicam Foundation

## NATIONAL GALLERY OF ART

### *Donors of Financial Support*

Mr. and Mrs. Edwin Bergman  
 J. Carter Brown  
 Mr. and Mrs. William N. Cafritz  
 The Dayton Hudson Corporation and  
 J. E. Caldwell Jewelers  
 Dr. and Mrs. Georges de Menil  
 L. H. Dishman  
 Mr. and Mrs. Charles Ducommun  
 James Epstein  
 David Epstein  
 Mr. and Mrs. Harold L. Frank  
 General Telephone and Electronics  
 Service Corporation  
 Mr. and Mrs. Nicholas Goulandris  
 Mr. Leo S. Guthman  
 Mr. and Mrs. James G. Hanes III  
 Mrs. Enid Haupt  
 Mrs. Joseph H. Hazen  
 Mr. and Mrs. Henry J. Heinz II  
 Mr. and Mrs. John Irwin II  
 Harriot H. Jardine  
 Edward C. Johnson III  
 Mrs. A. Seward Johnson  
 Mrs. Ruth Carter Johnson  
 Henrietta C. Kershaw

Mr. and Mrs. Robert Kogod  
 The Kresge Foundation  
 The Samuel H. Kress Foundation  
 Mr. and Mrs. Theodore Law  
 Edward E. MacCrone Charitable  
 Trust  
 The A. W. Mellon Educational and  
 Charitable Trust  
 The Andrew W. Mellon Foundation  
 Paul Mellon  
 Mr. and Mrs. Paul Mellon  
 D. S. Meltzer  
 General and Mrs. Dillman A. Rash  
 Mr. and Mrs. Richard Salomon  
 Emy Shapiro  
 Evelyn Sharp  
 Robert H. Smith  
 Ellie Spind  
 Mrs. R. F. Tartiere  
 Mr. and Mrs. Maurice Tobin  
 Mr. and Mrs. James M. Vaughn, Jr.  
 Washington Art League  
 John Wilmerding  
 Mr. and Mrs. William Wood-Prince



## NATIONAL GALLERY OF ART

### *Donors of Works of Art*

Anonymous  
Avalon Fund  
Ruth B. Benedict  
Ruth B. Benedict, in memory of Sophie and Carl Boschwitz  
Ruth and William Benedict, in memory of Lessing J. Rosenwald  
John and Louise Booth, in memory of their daughter, Winkie  
J. Carter Brown  
Ailsa Mellon Bruce Fund  
Nathan Chaikin, in memory of Dorothy Daubel-Chaikin  
Collectors Committee  
Dr. and Mrs. Arthur E. Dreskin  
James, David and Richard Epstein Fund  
Barbara Fiedler  
Gemini G. E. L.  
Dr. and Mrs. George Benjamin Green  
Mrs. Francis W. Hatch  
Dahlov Ipcar  
Mr. and Mrs. Jacob Kainen, in memory of Lessing J. Rosenwald  
Mr. and Mrs. Andrew S. Keck  
J. R. Kist  
Halleck Lefferts  
Karl Leubsdorf  
H. H. Walker Lewis, in memory of his parents,  
    Mr. and Mrs. Edwin A. S. Lewis  
Mr. and Mrs. Earl H. Look  
Florence S. McCormick  
Andrew W. Mellon Fund  
Mr. and Mrs. Paul Mellon  
Dr. Dieter Erich Meyer  
Pepita Milmore Memorial Fund  
Dr. and Mrs. Harold P. Morris  
Morton G. Neumann  
William B. O'Neal  
Robert S. Pirie  
Robert Rauschenberg  
Mark Reinsberg  
Elinor Roberts  
Andrew Robison, in memory of Lessing J. Rosenwald  
Felix Rozen  
David E. Rust  
Albert Scaglione  
Robert H. and Clarice Smith  
Mrs. Robert H. Thayer  
Mrs. Paul Tillich  
Josephine Tompkins  
David Tunick  
Arthur and Charlotte Vershbow  
Dr. and Mrs. Maclyn E. Wade  
Robert M. Walker  
Robert M. Walker, in memory of Lessing J. Rosenwald  
Emily M. Wilson, in memory of Anthony T. Wilson  
Mr. and Mrs. Jacob Zeitlin, in memory of Lessing J. Rosenwald  
Tessim Zorach

APPENDIX 9. *Visitors to the Smithsonian Institution in  
Fiscal Year 1980*

<i>Month</i>	<i>Smithsonian Institution Building</i>	<i>Arts &amp; Industries Building</i>	<i>Natural History Building</i>	<i>Air &amp; Space Building</i>	<i>Freer Gallery of Art</i>	<i>History &amp; Technology Building</i>
October 1979	64,081	68,724	329,195	533,737	24,999	333,334
November	58,143	61,509	309,746	553,040	23,684	243,527
December	51,882	57,949	213,384	371,240	20,137	284,633
January 1980	31,463	40,917	185,866	269,023	15,444	164,332
February	37,609	49,879	219,569	301,263	14,220	196,426
March	68,546	80,915	389,398	490,429	23,618	301,822
April	122,234	168,619	825,744	864,529	36,754	680,822
May	95,132	139,177	756,057	849,889	31,593	682,015
June	117,214	149,297	565,686	720,443	32,375	514,572
July	155,059	180,926	599,444	945,872	30,809	538,371
August	160,223	163,628	609,396	923,776	32,998	494,580
September	61,808	66,057	199,379	434,407	25,214	191,043
TOTALS	1,023,394	1,227,597	5,202,864	7,257,648	311,845	4,625,477

<i>Month</i>	<i>Fine Arts &amp; Portrait Gallery</i>	<i>Ren- wick Gallery</i>	<i>Hirshhorn Museum</i>	<i>Anacostia Neighbor- hood Museum</i>	<i>Cooper- Hewitt Museum</i>	<i>Museum of African Art</i>	<i>Totals</i>
October 1979	31,865	12,852	72,699	2,426	9,462	4,197	1,487,571
November	33,023	20,839	73,029	3,361	9,625	5,231	1,394,757
December	23,880	16,781	64,504	3,800	7,738	5,877	1,121,805
January 1980	24,506	19,462	46,959	5,153	9,327	4,172	816,624
February	29,635	11,661	49,461	7,272	12,379	6,660	936,034
March	37,891	21,949	80,636	5,366	20,120	6,098	1,526,788
April	34,714	24,032	122,452	4,825	10,440	6,392	2,901,557
May	31,100	24,697	110,204	3,606	10,924	7,712	2,742,106
June	34,784	27,119	102,264	2,732	12,751	8,973	2,288,210
July	33,604	19,664	98,105	4,033	11,188	9,947	2,627,022
August	29,986	19,685	106,626	3,346	10,719	6,630	2,561,593
September	26,551	16,784	51,881	2,650	9,998	6,130	1,091,902
TOTALS	371,539	235,525	978,820	48,570	134,671	78,019	21,495,969

Note: Not reflected in the above tabulation are an estimated 2,200,000 visitors to the National Zoological Park in calendar year 1980. The very nature of the Park, with its indoor and outdoor exhibits and its several vehicular and pedestrian entrances, makes it impossible to obtain exact visitor statistics. To overcome this difficulty, NZP has developed a reliable sampling system, which was used to determine the 1980 estimate.

APPENDIX 10. *The Smithsonian Institution and Its Subsidiaries,  
September 30, 1980*

OFFICE OF THE SECRETARY

<b>THE SECRETARY</b> .....	<b>S. DILLON RIPLEY</b>
Executive Assistant .....	James M. Hobbins
Special Assistant .....	Joseph Coudon
Administrative Assistant (Correspondence) .....	Mary Lynne McElroy
Administrative Assistant (Appointments) .....	Mary Lee Nissley
Supervisor, Secretary's Files .....	Betty J. Edwards

OFFICE OF THE UNDER SECRETARY

<b>The Under Secretary</b> .....	<b>Phillip S. Hughes</b>
----------------------------------	--------------------------

OFFICE OF THE SPECIAL ASSISTANT  
TO THE SECRETARY

<b>Special Assistant to the Secretary</b> .....	<b>Richard H. Howland</b>
Curator, Smithsonian Institution Building .....	James M. Goode
Honorary Research Associate .....	Paul H. Oehser

OFFICE OF AUDITS

<b>Director</b> .....	<b>Chris S. Peratino</b>
Assistant Directors .....	Benedict T. Maltagliati Patrick J. Stanton

SCIENCE

<b>Assistant Secretary for Service</b> .....	<b>David Challinor</b>
Executive Officer .....	Harold J. Michaelson
Program Manager .....	Ross B. Simons
Administrative Assistant .....	Rita Jordan

OFFICE OF BIOLOGICAL CONSERVATION

<b>Director</b> .....	<b>Edward S. Ayensu</b>
Coordinator .....	Robert A. DeFilipps
Program Manager .....	Marsha Cox

OFFICE OF FELLOWSHIPS AND GRANTS

<b>Director</b> .....	<b>Gretchen Gayle Ellsworth</b>
Assistant Director .....	Roberta Wolff Rubinoff
Grants Specialists .....	Francine C. Berkowitz Betty J. Wingfield
Program Specialist .....	Edith McRee Whiteman
Program Assistants .....	Elsie Bliss Grace Murphy
Administrative Assistant .....	Catherine F. Harris



## CHESAPEAKE BAY CENTER FOR ENVIRONMENTAL STUDIES

<b>Director</b> .....	<b>J. Kevin Sullivan</b>
Associate Director for Education	
Programs .....	John H. Falk
Associate Director for Science	
Programs .....	David L. Correll
Administrative Officer .....	Donald L. Wilhelm
Facilities Manager .....	John Rynarzewski

## FORT PIERCE BUREAU

Administrative Officer .....	June J. Jones
Carcinologist .....	Robert H. Gore
Embryologist/Life Histories .....	Mary E. Rice

## NATIONAL AIR AND SPACE MUSEUM

<b>Director</b> .....	<b>Noel W. Hinnners</b>
Deputy Director .....	Melvin B. Zisfein
Special Assistant to the Director .....	F. C. Durant III
Assistant Director for Resource	
Management and Operations .....	Walter J. Boyne
Administrative Officer .....	M. Antoinette Smith
Budget Analyst .....	Wendy A. Stephens
Registrar .....	Robin A. Schroffel
Theater Manager .....	Ronald Wagaman
Presentations Supervisor .....	Edmund Barker
Program Coordinator .....	B. Ashley Ball
Building Manager .....	Claude D. Russell
Acting Chief, Production Operations ...	Edward B. Chalkley
Acting Chief, Preservation, Restoration	
and Storage .....	Walter Roderick
Supervisory Museum Specialist .....	Alfred Bachmeier
Chief, Exhibits Production .....	Vacant
Chairman, Aeronautics Department ....	Donald S. Lopez
Historian Emeritus .....	Paul E. Garber
Special Advisor for Technology .....	Howard S. Wolko
Curators .....	Louis S. Casey
	Tom Crouch
	Robert Meyer
	Robert Mikesh
	Glen Sweeting
Associate Curator .....	Edmund Wooldridge, Jr.
Assistant Curators .....	Von D. Hardesty
	Claudia Oakes
Research Director, Center for Earth	
and Planetary Studies .....	Farouk El-Baz
Geologist .....	Ted A. Maxwell
	Robert W. Wolfe
Research Associate .....	Constance Andre
Acting Chairman, Space, Science and	
Exploration Department .....	Paul A. Hanle
Curators .....	Walter Flint
	Louis Purnell
Astronomer .....	Von del Chamberlain
Historian .....	Frank Winter
Chief, Spacearium .....	Vacant
Curator of Art .....	Vacant

Chief, Public Affairs and Museum Services .....	Rita C. Bobowski
Program Management Assistant .....	Helen C. McMahon
Chief, Education Services Division .....	Kerry M. Joels
Unit Chief, Outreach Programs .....	Janet K. Wolfe
Unit Chief, Special Programs .....	Jelen Podolske
Editor, <i>Air and Space</i> .....	Jan W. Steenblik
Docent and Tour Program Manager ..	Holly Haynes
Acting Chief, Exhibits and Presentations Division .....	Richard Crawford
Editor .....	Edna Owens
Exhibits Program Manager .....	Richard Crawford
Chief, Design Unit .....	Robert Widder
Chief, Audiovisual Unit .....	Hernan Otano

NATIONAL MUSEUM OF MAN, CENTER FOR THE STUDY OF MAN

Director .....	Richard S. Fiske
Associate Director .....	James F. Mello
Administrative Officer .....	Sherrill Berger

National Anthropological Film Center

Director .....	E. Richard Sorenson
Research Film Studies Coordinator .....	Gay C. Neuberger

RESEARCH ASSOCIATES, COLLABORATORS, AND AFFILIATED SCHOLARS

Research Associates .....	Asen Balikci, University of Montreal, Quebec
	John K. Marshall, Documentary Educational Resources, Somerville, Massachusetts

Research Institute on Immigration and Ethnic Studies

Director .....	Roy S. Bryce-Laporte
Administrative Assistant .....	Betty S. Dyson
Research Associate .....	Donald L. Horowitz

NATIONAL MUSEUM OF NATURAL HISTORY

Director .....	Richard S. Fiske
Associate Director .....	James F. Mello
Deputy Director for Research .....	Terry L. Erwin
Special Assistant to the Director .....	Catherine J. Kerby
Writer-Editor .....	Thomas R. Harney
Administrative Officer .....	Charles A. Ossola
Registrar .....	Margaret A. Santiago
Budget Analyst .....	Claretta Jackson
Management Analyst .....	John Townsend
Registrar .....	Margaret A. Santiago
Building Manager .....	Jerome A. Conlon
Supervisory Information and Education Specialist, Office of Education .....	Joan C. Madden
Information Systems Manager, Automatic Data Processing Program .	T. Gary Gautier
Chief, Office of Exhibits .....	Eugene F. Behlen
Assistant Chief, Office of Exhibits .....	William F. Haase
Supervisory Museum Specialist, Scanning Electron Microscope Laboratory .....	Walter R. Brown
Operations Officer, Scientific Events Alert Network .....	David R. Squires

## *Anthropology*

Chairman .....	Douglas H. Ubelaker
Administrative Assistant .....	Clara Ann Simmons
Collections Manager .....	U. Vincent Wilcox
Conservation Laboratory, Supervisor ...	Carolyn L. Rose
Illustrator, Supervisor .....	George R. Lewis
Processing Laboratory, Supervisor .....	George E. Phebus
Public Information Specialist .....	Ruth O. Selig
Curator, National Anthropological Archives .....	Herman J. Viola

## LATIN AMERICAN ANTHROPOLOGY

Curators .....	Clifford Evans Robert M. Laughlin
Associate Curator .....	William H. Crocker

## NORTH AMERICAN ANTHROPOLOGY

Curators .....	William W. Fitzhugh Dennis M. Stanford William C. Sturtevant
Associate Curator .....	Bruce D. Smith

## OLD WORLD ANTHROPOLOGY

Curators .....	Gordon D. Gibson William B. Trousdale Gus Van Beek
Associate Curator .....	Adrienne Kaeppler

## PHYSICAL ANTHROPOLOGY

Curators .....	J. Lawrence Angel Donald J. Ortner Douglas H. Ubelaker
Associate Curator .....	Lucile E. St. Hoyme

## LINGUISTICS

Associate Curator .....	R. H. Ives Goddard
-------------------------	--------------------

## RESEARCH ASSOCIATES, COLLABORATORS, AND AFFILIATED SCIENTISTS

John P. Albanese (Geology)	Stephen Potter (Archeology)
Larry D. Banks (Geology)	Walter Putschar (Physical Anthropology)
Alison S. Brooks (Archeology)	Saul H. Risenberg (Ethnology)
Ernest S. Burch, Jr. (Ethnology)	Scott Rolston (Physical Anthropology)
Claire Cassidy (Physical Anthropology)	F. Schulner-Ellis (Physical Anthropology)
Henry B. Collins (Archeology)	T. Dale Stewart (Physical Anthropology)
Steven L. Cox (Archeology)	Mildred Mott Wedel (Archeology and Ethnohistory)
John C. Ewers (Plains Ethnology)	Waldo R. Wedel (Archeology)
Donald Fowler (Archeology)	Theodore A. Wertime (Archeology)
Bruno Frohlich (Physical Anthropology)	John E. Yellen (Archeology)
Brian Hesse (Archeology)	
Paula Hesse (Archeology)	
Eugene Knez (Ethnology)	
Betty J. Meggers (Archeology)	



## Botany

Chairman .....	Dieter C. Wasshausen
Administrative Assistant .....	Nella F. Lloyd
Collections Manager .....	George F. Russell III
Senior Botanists .....	Richard S. Cowan
	Mason E. Hale, Jr.

## PHANEROGAMS

Curators .....	Dan H. Nicolson
	Robert W. Read
	Dieter C. Wasshausen
	John J. Wurdack
Associate Curators .....	Robert B. Faden
	Marie-Hélène Sachet
	Stanwyn G. Shetler
	Laurence E. Skog

## FERNS

Associate Curator .....	David B. Lellinger
-------------------------	--------------------

## GRASSES

Curator .....	Thomas R. Soderstrom
---------------	----------------------

## CRYPTOGAMS

Curator .....	Harold E. Robinson
Associate Curator .....	James N. Norris

## PALYNOLOGY

Curator .....	Joan C. Nowicke
---------------	-----------------

## PLANT ANATOMY

Curators .....	Edward S. Ayensu
	Richard H. Eyde

## RESEARCH ASSOCIATES, COLLABORATORS, AND AFFILIATED SCIENTISTS

Katina Bucher (Cryptogams)	Alicia Lourteig (Neotropical Botany)
Jose Cuatrecasas (Flora of Tropical South America)	Kittie F. Parker (Compositae)
Arthur Lyon Dahl (Algae)	Duncan M. Porter (Phanerogams)
James A. Duke (Flora of Panama)	Muriel E. Poston (Loasaceae)
Marie L. Farr (Fungi)	Clyde F. Reed (Phanerogams)
F. Raymond Fosberg (Tropical Island Plants)	Velva E. Rudd (Leguminosae)
Aaron Goldberg (Phanerogams)	Lyman B. Smith (Flora of Brazil)
Charles R. Gunn (Seeds)	Seymour H. Sohmer (Phanerogams)
LeRoy H. Harvey (Grasses)	Frans A. Stafleu (Phanerogams)
William H. Hathaway (Flora of Central America)	William L. Stern (Plant Anatomy)
Joseph H. Kirkbride, Jr. (Rubiaceae)	Philip Sze (Algae)
James D. Lawrey (Lichens)	Edward E. Terrell (Phanerogams)
Paul A. Lentz (Fungi)	Francis A. Uecker (Fungi)
Elbert L. Little, Jr. (Dendrology)	Egbert H. Walker (East Asian Flora)

## *Entomology*

Chairman .....	Don R. Davis
Collections Manager .....	Gary F. Hevel
Senior Scientists .....	Paul D. Hurd, Jr. Karl V. Krombein

### NEUROPTEROIDS AND DIPTERA

Curator .....	Oliver S. Flint, Jr.
Associate Curator .....	Wayne N. Mathis

### LEPIDOPTERA

Curators .....	John M. Burns Don R. Davis W. Donald Duckworth William D. Field
----------------	--

### COLEOPTERA

Curator .....	Terry L. Erwin
Associate Curator .....	Paul J. Spangler

### HEMIPTERA AND HYMENOPTERA

Curators .....	Richard C. Froeschner Paul D. Hurd, Jr. Karl V. Krombein
----------------	--

### MYRIAPODA AND ARACHNIDA

Curator .....	Ralph E. Crabill, Jr.
---------------	-----------------------

### RESEARCH ASSOCIATES, COLLABORATORS, AND AFFILIATED SCIENTISTS

Charles P. Alexander (Diptera)	Arnold S. Menke (Hymenoptera)
Donald W. Anderson (Coleoptera)	Douglass R. Miller (Homoptera)
Edward W. Baker (Mites)	Carl F. W. Muesebeck (Hymenoptera)
S. W. T. Batra (Hymenoptera)	Kenelm W. Philip (Lepidoptera)
S. Franklin Blanton (Diptera)	George W. Rawson (Lepidoptera)
Barnard Burks (Hymenoptera)	Mary Livingston Ripley (General Entomology)
Robert W. Carlson (Hymenoptera)	Louise M. Russell (Homoptera)
Oscar L. Cartwright (Coleoptera)	Curtis W. Sabrosky (Diptera)
J. F. Gates Clarke (Lepidoptera)	Robert L. Smiley (Mites)
Hilary Crusz (Insects of Sri Lanka)	David R. Smith (Hymenoptera)
K. C. Emerson (Mallophaga)	Theodore J. Spilman (Coleoptera)
John H. Fales (Lepidoptera)	George C. Steyskal (Diptera)
Douglas C. Ferguson (Lepidoptera)	Manya B. Stoetzel (Homoptera)
Richard H. Foote (Diptera)	F. Christian Thompson (Diptera)
John G. Franclemont (Lepidoptera)	Edward L. Todd (Lepidoptera)
Raymond J. Gagné (Diptera)	Robert Traub (Siphonaptera)
Robert D. Gordon (Coleoptera)	Hayo H. W. Velthuis (Hymenoptera)
E. Eric Grissell (Hymenoptera)	Ronald A. Ward (Medical Entomology)
Ashley B. Gurney (Orthoptera)	Richard E. White (Coleoptera)
Jon L. Herring (Hemiptera)	Donald R. Whitehead (Coleoptera)
Ronald W. Hodges (Lepidoptera)	Willis W. With (Diptera)
Harry Hoogstraal (Medical Entomology)	David Wooldridge (Coleoptera)
John M. Kingsolver (Coleoptera)	
Lloyd Knutson (Diptera)	
James P. Kramer (Homoptera)	
Paul M. Marsh (Hymenoptera)	

<i>Invertebrate Zoology</i>	
Chairman .....	W. Duane Hope
Collections Manager .....	Roland Brown
Senior Zoologist .....	Horton H. Hobbs, Jr.
CRUSTACEA	
Curators .....	J. Laurens Barnard Thomas E. Bowman Roger F. Cressey Charles W. Hart, Jr. Louis S. Kornicker Raymond B. Manning Brian F. Kensley
Associate Curator .....	
ECHINODERMS	
Curators .....	Frederick M. Bayer David L. Pawson Klaus Rützler
MOLLUSKS	
Curators .....	Clyde F. E. Roper Joseph Rosewater
Associate Curators .....	Arthur H. Clarke Richard S. Houbrick
WORMS	
Curators .....	Robert P. Higgins Meredith L. Jones
Associate Curators .....	Kristian Fauchald Mary E. Rice
RESEARCH ASSOCIATES, COLLABORATORS, AND AFFILIATED SCIENTISTS	
S. Stillman Berry	Patsy McLaughlin
J. Bruce Bredin	Charles G. Messing
Stephen D. Cairns	Marian Pettibone
Fenner A. Chace	Anthony J. Provenzano, Jr.
Sing Chen Chang	Harald A. Rehder
Hillary Boyle Cressey	Frank R. Schwengal
Isabel Perez Farfante	I. G. Sohn
John C. Harshbarger	Geerart J. Vermeij
Lipke B. Holthuis	Gilbert L. Voss
Roman Kenk	Austin B. Williams
J. Ralph Lichtenfels	David K. Young
<i>Mineral Sciences</i>	
Chairman .....	Daniel E. Appleman
Administrative Services Assistant .....	Elizabeth J. Ebel
METEORITES	
Curators .....	Roy S. Clarke, Jr. Brian H. Mason
Geochemists .....	Kurt Fredriksson Robert F. Fudali
MINERALOGY	
Curator .....	Paul E. Desautels
Associate Curator .....	John S. White, Jr.



# PETROLOGY AND VOLCANOLOGY

Curators .....	Richard S. Fiske William G. Melson Tom Simkin
----------------	---

# PHYSICAL SCIENCES LABORATORY

Chemists .....	Julie N. Barrows Eugene Jarosewich Joseph A. Nelen
Electronics Technician .....	Charles R. Obermeyer

# RESEARCH ASSOCIATES, COLLABORATORS, AND AFFILIATED SCIENTISTS

Vagn F. Buchwald (Meteorites)	Edward Henderson (Meteorites)
William C. Buell, IV (Volcanology)	Peter A. Jezek (Petrology)
Gary R. Byerly (Petrology)	Peter Leavens (Mineralogy)
Robert T. Dodd (Meteorites)	Paul B. Moore (Mineralogy)
John Filson (Meteorites)	Geoffrey Thompson (Petrology)
Michael Fleischer (Mineralogy)	Othmar T. Tobisch (Petrology)
Martin Flower (Petrology)	John J. Trelawney (Mineralogy)

# *Paleobiology*

Chairman .....	Martin A. Buzas
Collections Manager .....	Frederick J. Collier

# INVERTEBRATE PALEONTOLOGY

Curators .....	Richard H. Benson Richard S. Boardman Martin A. Buzas Alan H. Cheetham Richard Cifelli Richard E. Grant Porter M. Kier Thomas R. Waller
Geologist .....	Kenneth M. Towe

# VERTEBRATE PALEONTOLOGY

Curators .....	Nicholas Hotton III Clayton E. Ray
Associate Curator .....	Robert J. Emry

# PALEOBOTANY

Curators .....	Walter H. Adey Leo J. Hickey Frances M. Hueber
----------------	--

# SEDIMENTOLOGY

Curator .....	Jack W. Pierce
Geological Oceanographer .....	Daniel J. Stanley
Geologist .....	Ian G. Macintyre

# RESEARCH ASSOCIATES, COLLABORATORS, AND AFFILIATED SCIENTISTS

Patricia Adey	G. Arthur Cooper
Arthur J. Boucot	Daryl P. Domning
Sankar Chatterjee	Raymond Douglass
Anthony G. Coates	J. Thomas Dutro, Jr.

Douglas Emlong\*  
Ralph E. Eshelman  
Jerzy A. Federowski  
Robert M. Finks  
C. Lewis Gazin  
Mackenzie Gordon, Jr.  
Peter J. Harmatuk  
Bruce N. Haugh  
Joseph E. Hazel  
S. Taseer Hussain  
Ralph W. Imlay  
Jeremy B. C. Jackson  
Gilbert Kelling  
Zofia Kielan-Jaworowskia  
Harry S. Ladd  
N. Gary Lane  
Kenneth E. Lohman  
Venka V. Macintyre  
Andres Maldonado  
Sergius H. Mamay  
James F. Mello

Robert B. Neuman  
William A. Oliver, Jr.  
Thomas F. Phelen  
John Pojeta, Jr.  
Roy H. Reinhart  
Charles A. Repenning  
Bruce Runnegar  
William J. Sando  
Frederick R. Siegel  
Elwyn L. Simons  
Judith E. Skog  
Norman F. Sohl  
I. Gregory Sohn  
George D. Stanley, Jr.  
Steven M. Stanley  
Robert S. Steneck  
Margaret Ruth Todd  
Frank C. Whitmore, Jr.  
Druid Wilson  
Ellis P. Yochelson

*Vertebrate Zoology*

Chairman .....	George R. Zug
Collections Manager .....	J. Phillip Angle

FISHES

Curators .....	Robert H. Gibbs, Jr. Ernest A. Lachner Victor G. Springer Stanley H. Weitzman
Assistant Curator .....	Richard P. Vari

REPTILES AND AMPHIBIANS

Curators .....	W. Ronald Heyer George R. Zug
----------------	----------------------------------

BIRDS

Curators .....	George E. Watson Richard L. Zusi
Associate Curators .....	Storrs L. Olson Paul Slud

MAMMALS

Curators .....	Charles O. Handley, Jr. Richard W. Thorington, Jr.
Associate Curator .....	James G. Mead
Assistant Curator .....	Michael D. Carleton

SECRETARY'S RESEARCH LABORATORY

Research Assistant .....	Gorman M. Bond
Administrative Specialist .....	Adele Y. Issa
Executive Assistant (ICBP) .....	Roger Pasquier

\* Deceased June 1980.

# RESEARCH ASSOCIATES, COLLABORATORS, AND AFFILIATED SCIENTISTS

John W. Aldrich (Birds)	Roxie C. Laybourne (Birds)
John S. Ash (Birds)	Joseph T. Marshall (Birds)
Richard C. Banks (Birds)	Roy W. McDiarmid (Reptiles, Amphibians)
William Belton (Birds)	J. A. J. Meester (Mammals)
Michael A. Bogan (Mammals)	Edgardo Mondolfi (Mammals)
James E. Bohlke (Fishes)	Russell E. Mumford (Mammals)
Robert L. Brownell (Mammals)	Ralph S. Palmer (Birds)
Howard W. Campbell (Reptiles, Amphibians)	William F. Perrin (Mammals)
Daniel M. Cohen (Fishes)	Allan R. Phillips (Birds)
Bruce B. Collette (Fishes)	Dioscoro S. Rabor (Mammals)
Robert K. Enders (Mammals)	Randall R. Reeves (Mammals)
Carl H. Ernst (Reptiles, Amphibians)	S. Dillon Ripley (Birds)
Alan Feduccia (Birds)	Brian Robbins (Mammals)
John G. Frazier (Reptiles, Amphibians)	Rudolfo Ruibal (Reptiles, Amphibians)
Herbert Friedmann (Birds)	William Schevill (Mammals)
Jeffrey Froehlich (Mammals)	David W. Steadman (Birds)
Alfred L. Gardner (Mammals)	Stephen G. Tilley (Reptiles, Amphibians)
Richard Highton (Reptiles, Amphibians)	Joseph P. Ward (Reptiles, Amphibians)
George J. Jacobs (Reptiles, Amphibians)	Richard Wassersug (Reptiles, Amphibians)
Frances C. James (Birds)	John C. Weske (Birds)
Clyde J. Jones (Mammals)	Ralph M. Wetzel (Mammals)
Warren B. King (Birds)	Claudia P. Wilds (Birds)
Gordon L. Kirkland (Mammals)	James D. Williams (Fishes)
E. V. Komarek (Mammals)	Don E. Wilson (Mammals)
Irving Kornfield (Fishes)	

## *Handbook of North American Indians*

General Editor .....	William C. Sturtevant
Production Manager .....	Diane Della-Loggia
Management Services Assistant .....	Melvina Jackson
Anthropologist .....	Laura J. Greenberg
Linguist .....	R. H. Ives Goddard
Librarian .....	Lorraine H. Jacoby

## *Smithsonian Oceanographic Sorting Center*

Director .....	Frank D. Ferrari
Administrative Services Assistant .....	Jackie Edwards

## NATIONAL ZOOLOGICAL PARK

<b>Director</b> .....	<b>Theodore H. Reed</b>
Assistant Director for Animal Programs	John F. Eisenberg
Assistant Director for Support Services .	Gaetano G. Calise, Jr.
Special Assistant to the Director .....	Robert J. Hoage
Chief, Office of Management Services ..	Vincent J. Doyle
Curators:	
Department of Herpetology .....	Dale L. Marcellini
Department of Mammalogy .....	Edwin Gould
Department of Ornithology (Acting) .	Eugene S. Morton
Registrar .....	Judith Block



Scientist-in-Charge, Department of Zoological Research .. Scientific Staff .....	Devra G. Kleiman Eugene S. Morton Katherine S. Ralls John C. Seidensticker
Veterinarian-in-Charge, Department of Animal Health ..... Assistant Veterinarian ..... Veterinarian Emeritus .....	R. Mitchell Bush Donald L. Janssen Clinton W. Gray
Pathologist-in-Charge, Department of Pathology ..... Research Associates:	Richard J. Montali
C. K. Hsu George D. Imes	Sidney R. Jones Opendra Narayan John D. Strandberg John D. Toft, II Bernard Zook
Curator-in-Charge, Department of Conservation ..... Facility Manager .....	Christen M. Wemmer John N. Williams
Chief, Office of Education .....	Judith White
Chief, Office of Construction Management .....	Vacant
Chief, Office of Facilities Management ..	Emanuel Petrella
Chief, Office of Graphics and Exhibits ..	Robert E. Mulcahy
Chief, Office of Police, Health & Safety ..	Samuel L. Middleton, Jr.
Director, Friends of the National Zoo ..	Sabin Robbins
Associate in Ecology .....	S. Dillon Ripley
Collaborator .....	Kenhelm W. Stott

*Research Associates and Affiliated Scientists*

Maxeen Biben	Kenneth M. Green	Walter Poduschka
Carolyn Crockett	Judith L. Hand	John G. Robinson
Jean Delacour	Paul Leyhausen	James K. Russell
Wolfgang P. J. Dittus	Susan Lumpkin	Ranka Sekulic
Richard Faust	James R. Malcolm	Gay Troth
John G. Frazier, Jr.	Nancy Muckenhirn	Susan C. Wilson
Sheri L. Gish	Edgardo Mondolfi	

*RADIATION BIOLOGY LABORATORY*

<b>Director</b> .....	<b>William H. Klein</b>
Assistant Director .....	W. Shropshire, Jr.
Agricultural Engineer .....	John Sager
Anthropologist .....	Robert Stuckenrath
Aquatic Ecologist .....	Claire Buchanan
Biochemists .....	Ora Canaani
	Maurice Margulies
Biologists .....	Elisabeth Gantt
	Rebecca Hayes
Geneticist .....	Roy W. Harding, Jr.
Physicist .....	Bernard Goldberg
Plant Physiologists .....	Charles F. Cleland
	Gerald Deitzer
	Bert G. Drake
	John L. Edwards
	Rita Khanna
	Thomas Redlinger
	William O. Smith
	Bruce Whitaker

# SMITHSONIAN ASTROPHYSICAL OBSERVATORY

(Including Harvard Members of the Center for Astrophysics)

<b>Director</b> .....	<b>George B. Field</b>	
Assistant Director .....	John G. Gregory	
Eugene H. Avrett	Jonathan E. Grindlay	William H. Parkinson
John A. Ball	Mario Grossi	Joseph Patterson
Barbara Bell	Herbert Gursky	Michael R. Pearlman
John Black	Shadia Habbal	William H. Press
Bartley Cardon	F. R. Harnden, Jr.	Harrison E. Radford
Nathaniel P. Carleton	Lee W. Hartmann	John C. Raymond
Alastair G. W. Cameron	Timothy Heil	Mark Reid
Frederic Chaffee	J. Patrick Henry	Robert Rosner
Eric J. Chaisson	John P. Huchra	Micheline C. Roufousse
Kelley Chance	Luigi G. Jacchia	George B. Rybicki
Steven Mark Christensen	Christine Jones-Forman	John A. Rys
Halden Cohn	Paul Kalaghan	Rudolph E. Schild
Giuseppe Colombo	Wolfgang Kalkofen	Matthew Schneps
Guy J. Consolmagno	Stephen M. Kent	Herbert W. Schnopper
Eustratios Constantinides	Kate Kirby-Docken	Ethan J. Schreier
Allan F. Cook	Randall Knight	Daniel A. Schwartz
Marc Davis	Edgar Knobloch	Joseph Schwarz
Robert Davis	David Koch	Zdenek Sekanina
Alexander Dalgarno	John L. Kohl	Frederick D. Seward
John P. Delvaille	Yoshihide Kozai	Peter L. Smith
Bruce Draine	Robert L. Kurucz	Robert Stachnik
Andrea K. Dupree	David M. Latham	William K. Stevens
Martin S. Elvis	David Layzer	Harvey D. Tananbaum
Giuseppina Fabbiano	Myron Lecar	Paul O. Taylor
Daniel G. Fabricant	Randolph H. Levine	Wesley A. Traub
Michael Fall	Alan P. Lightman	Wallace H. Tucker
Giovanni G. Fazio	Martha H. Liller	Giuseppe S. Vaiana
Edward L. Fireman	William Liller	Leon P. VanSpeybroeck
Brian P. Flannery	A. Edward Lilley	Robert F. C. Vessot
William R. Forman	Richard London	George A. Victor
Fred A. Franklin	Brian G. Marsden	Trevor C. Weekes
Daryl E. Freeman	Ursula B. Marvin	Steven Weinberg
Bruce Fryxell	Edward M. Mattison	Heinz Weiser
Edward M. Gaposchkin	Alan Maxwell	Fred L. Whipple
John C. Geary	Brian McBreen	Charles A. Whitney
Reinhard Genzel	Richard E. McCrosky	George L. Withbroe
Riccardo Giacconi	James M. Moran	John A. Wood
Owen Gingerich	Stephen S. Murray	Frances W. Wright
Leo Goldberg	Peter Nisenson	Kouichi Yoshino
Leon Golub	Robert W. Noyes	Fred Young
Paul Gorenstein	Michael Oppenheimer	Martin V. Zombeck
Richard E. Griffiths	Costas Papaliolios	

## SMITHSONIAN TROPICAL RESEARCH INSTITUTE

<b>Director</b> .....	<b>Ira Rubinoff</b>
Acting Director .....	Michael H. Robinson
Acting Assistant Director .....	Peter W. Glynn
Special Assistant to Director .....	Adela Gomez
Deputy Special Assistant to Director ...	Elena Lombardo

Senior Scientists .....	Martin H. Moynihan
Administrative Officer .....	A. Stanley Rand
Superintendent, Barro Colorado Nature Monument .....	Frank Morris
Facilities Manager .....	Gilberto Ocaña
Librarian .....	Thomas R. Borges
Head, Office of Conservation and Environmental Education .....	Alcira Mejia
Educational Coordinator .....	Nicholas Smythe
	Georgina DeAlba
<i>Scientific Staff</i>	
John Cubit	D. Ross Robertson
Robert L. Dressler	Michael H. Robinson
Mary Jane West	Arcadio F. Rodaniche
Eberhard	David W. Roubik
William Eberhard	Roberta W. Rubinoff
Peter W. Glynn	Robert E. Silberglied
Egbert Leigh, Jr.	Alan P. Smith
Olga F. Linares	Neal G. Smith
Harilaos Lessios	Donald M. Windsor
G. Gene Montgomery	Hindrik Wolda
<i>Research Associates</i>	
Annette Aiello	Deborah Caldwell Hahn
Humberto Alvarez	Jane Lubchenco
Robin Andrews	Yael Lubin
Carlos Arellano L.	Ernst Mayr
Charles F. Bennett, Jr.	Bruce Menge
José Ignacio Borrero	Katherine Milton
Gordon M. Burghardt	Anthony Ranere
Richard Cooke	Tyson Roberts
Reinaldo Díaz V.	Barbara Robinson
Kerry Ann Dressler	Gordon B. Small
Robin Foster	W. John Smith
Nathan Gale	Henry Stockwell
Pedro Galindo	Alastair M. Stuart
Carmen Glynn	Paulo E. Vanzolini
Jeffrey B. Graham	Fritz Vollrath

HISTORY AND ART

Assistant Secretary .....	Charles Blitzer
Special Assistants .....	Dean Anderson
	Susan Hamilton
Administrative Officer .....	Patricia DuVall
<i>ARCHIVES OF AMERICAN ART</i>	
<i>New York (Administrative Office)</i>	
Director .....	William E. Woolfenden
Assistant Director .....	Vacant
<i>Washington (Processing Center)</i>	
Senior Curator .....	Garnett McCoy
Administrative Officer .....	Richard J. Nicastro
Curator of Manuscripts .....	Arthur Breton
Associate Curator of Manuscripts .....	Judith E. Throm

[ cont. ]



*New York Area Office*

Area Director ..... William McNaught

*Boston Area Office*

Area Director ..... Robert Brown

*Detroit Area Office*

Area Director ..... Dennis Barrie

*San Francisco Area Office*

Area Director ..... Paul Karlstrom

**COOPER-HEWITT MUSEUM**

<b>Director</b> .....	<b>Lisa Taylor</b>
Assistant Director for Collections	
Management .....	Christian Rohlfing
Curator of Drawings and Prints .....	Elaine Evans Dee
Curator of Decorative Arts .....	David Revere McFadden
Curator of Textiles .....	Milton Sondag
Registrar .....	Albina DeMeio
Librarian .....	Robert Kaufmann
Conservator, Textile .....	Lucy Commoner
Conservator, Paper .....	Konstanze Bachmann
Exhibition Coordinator .....	Dorothy Twining Globus
Exhibition Designer .....	Robin Parkinson
Graphic Designer .....	Heidi Humphrey
Business Administrator .....	Kurt Struver
Chief of Security .....	Luis Palau
Buildings Manager .....	Fred Catapano
Programs Manager .....	Mary Kerr
Museum Shop Manager .....	Railey Macey
Public Relations Manager .....	Isabelle Silverman
Business Office Manager .....	Elizabeth McKirdie
Administrative Assistants to the Director	Barbara V. Foss
	Peter M. Scherer
Administrative Aide .....	Judy Johns

**FREER GALLERY OF ART**

<b>Director</b> .....	<b>Thomas Lawton</b>
Assistant Director for Administration ..	Richard Louie
Administrative Officer .....	Sarah L. Newmeyer
Associate Curator, Chinese Art .....	Shen C. Y. Fu
Associate Curator, Japanese Art .....	Yoshiaki Shimizu
Associate Curator, Near Eastern Art ...	Esin Atil
Assistant Curator, Japanese Art .....	Ann Yonemura
Translator .....	Julia K. Murray
Head Conservator, Technical Laboratory	W. Thomas Chase III
Conservators .....	John Winter
	Lynda A. Zycherman
Research Curator, Far Eastern Ceramics	John A. Pope
Research Assistant .....	Josephine H. Knapp
Librarian .....	Priscilla P. Smith
Assistant Librarian .....	Chung-ming Lung
Registrar .....	Eleanor Radcliffe
Registrarial Technician .....	Harriet McWilliams
Honorary Associates .....	Richard Edwards
	Calvin French

## HIRSHHORN MUSEUM AND SCULPTURE GARDEN

<b>Director</b> .....	<b>Abram Lerner</b>
Deputy Director .....	Stephen E. Weil
Executive Officer .....	Nancy F. Kirkpatrick
Chief Curator .....	Charles W. Millard
Curator of Exhibitions .....	Cynthia J. McCabe
Curator for Archives .....	Inez Garson
Associate Curators .....	Frank Gettings
	Phyllis Rosenzweig
	Judith Zilczer
Assistant Curators .....	Howard Fox
	Miranda McClintic
Librarian .....	Anna Brooke
Conservators .....	Laurence Hoffman
	Antoinette Owens
Registrar .....	Douglas Robinson
Chief, Education .....	Edward Lawson
Writer/Editor .....	Nancy Grubb
Chief, Exhibits and Design .....	Joseph Shannon
Information Specialist .....	Sidney Lawrence
Photographer .....	John Tennant
Building Services Coordinator .....	Frank Underwood

## JOSEPH HENRY PAPERS

<b>Editor</b> .....	<b>Nathan Reingold</b>
Associate Editor .....	Arthur P. Molella
Assistant Editor .....	Marc Rothenberg
Staff Historian .....	Kathleen Waldenfels
Research Assistant .....	Joan F. Steiner
Administrative Officer .....	Beverly Lepley

## MUSEUM OF AFRICAN ART

<b>Director</b> .....	<b>Warren Robbins</b>
Assistant Director for Administration ..	Jean Salan
Buildings Manager .....	Basil Arendse
Curator of Collections .....	Lydia Puccinelli
Acting Registrar .....	Lee Williams
Conservator .....	Rene Welfield
Program/Education Director .....	Amina Dickerson
Academic Coordinator, Higher Education	Edward Lifschitz
Archives Assistants .....	Bryna Freyer
	Dorothy Huete
Librarian .....	Janet Stanley

## NATIONAL COLLECTION OF FINE ARTS

<b>Director</b> .....	<b>Joshua C. Taylor</b>
Assistant Director .....	Harry Lowe
Administrator .....	H. Eugene Kelson
Associate Administrator .....	Charles J. Robertson
Assistant to the Director .....	Birute Vileisis
Curator, 20th Century Painting and Sculpture .....	Harry Rand
Associate Curator, 20th Century Painting and Sculpture .....	Virginia Mecklenburg
Assistant Curator, Joseph Cornell Study Center .....	Lynda Hartigan

[ *cont.* ]

Consultant, 20th Century Painting and Sculpture .....	Adelyn Breeskin
Curator, 18th and 19th Century Painting and Sculpture .....	William H. Truettner
Associate Curator, 18th and 19th Century Painting and Sculpture .....	Robin Bolton-Smith
Curator, Prints and Drawings .....	Janet Flint
Associate Curator, Prints and Drawings	Martina Norelli
Curator of Education .....	Barbara Shissler
Associate Curator of Education, Secondary .....	Teresa C. Grana
Assistant Curator of Education, Elementary .....	Margery E. Gordon
Director, Renwick Gallery .....	Lloyd E. Herman
Curator, Renwick Gallery .....	Michael Monroe
Associate Curator, Renwick Gallery ....	Ellen Myette
Curator of Research .....	Lois M. Fink
Chief, Office of Exhibition and Design ..	David Keeler
Assistant Chief, Office of Exhibition and Design .....	Val Lewton
Conservators .....	Ann Creager
	Katherine Eirk
	Stefano Scafetta
Editor, Office of Publications .....	Carroll Clark
Registrar .....	W. Robert Johnston
Assistant Registrar .....	Thomas W. Bower
Chief, Packing and Shipping .....	Burgess A. Coleman
Coordinator of Program Support .....	Lois A. Bingham
Chief, Office of Public Affairs .....	Margery Byers
Chief, Office of Visual Resources .....	Eleanor Fink
Assistant Chief, Office of Visual Resources .....	Rachel Allen
Photographers .....	Martin A. Curry
	Michael Fisher
Coordinator, Inventory of American Paintings .....	Martha Andrews
Coordinator, Smithsonian Art Index ...	Bess L. Hormats
Librarian (Acting), NCFA/NPG .....	Katherine Ratzenberger

#### NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY

<b>Director</b> .....	<b>Roger G. Kennedy</b>
Special Assistant .....	William J. Harvey IV
Deputy Director .....	Douglas E. Evelyn
Executive Officer .....	Luis del Rio
<i>National Philatelic Collections</i>	
Executive Director .....	Robert G. Tillotson
Associate Curator .....	Reidar Norby
<i>National Numismatics Collections</i>	
Historians .....	Vladimir Clain-Stefanelli
	Elvira Clain-Stefanelli
Research Associate .....	Emery May Norweb
<i>Eisenhower Institute for Historical Research</i>	
Historians .....	James Hutchins
	Forrest C. Pogue



*Office of Building Management*

Building Manager .....	Lawrence A. Bush
Assistant Building Manager .....	William Sanford

*Division of Conservation*

Head Conservator .....	J. Scott Odell
------------------------	----------------

*Department of Exhibits*

Assistant Director for Exhibits .....	Benjamin W. Lawless
Chief, Exhibits Management .....	Richard S. Virgo
Acting Chief, Exhibits Design .....	Benjamin W. Lawless
Chief, Exhibits Production .....	Walter N. Lewis

*Office of Public and Academic Programs*

Director .....	Josiah Hatch
Education Coordinator .....	Alice Reno Malone
Public Information Officer .....	Geraldine E. Sanderson

*Office of Registrar*

Registrar .....	Virginia Beets
Assistant Registrar .....	Martha Morris

*Department of Social and National History*

Chairman .....	Claudia B. Kidwell
Vice-Chairman .....	Gary B. Kulik

CERAMICS AND GLASS

Assistant Curator .....	Susan Myers
Curators Emeritus .....	Paul V. Gardner
	J. Jefferson Miller II
	C. Malcolm Watkins
Collaborator .....	Joan P. Watkins
Fellow .....	Hans Syz
Research Associate .....	Ivor Noël Hume

COMMUNITY LIFE

Curators .....	Richard E. Ahlborn
	Carl H. Scheele

COSTUME

Curator .....	Claudia B. Kidwell
Acting Supervisor .....	Ann Rothberg
Curator Emeritus .....	Anne W. Murray

DOMESTIC LIFE

Curators .....	Anne C. Golovin
	Rodris C. Roth

GRAPHIC ARTS

Curator .....	Elizabeth M. Harris
---------------	---------------------

MUSICAL INSTRUMENTS

Curators .....	John T. Fesperman
	Cynthia A. Hoover
Research Associate .....	Mrs. Sheridan Germann

#### POLITICAL HISTORY

Curators .....	Herbert R. Collins Margaret B. Klapthor
Associate Curator .....	Edith P. Mayo

#### TEXTILES

Curator .....	Rita J. Adrosko
Assistant Curator .....	Gary B. Kulik

#### *Department of the History of Science and Technology*

Chairman .....	Bernard S. Finn
Vice-Chairman .....	Robert C. Post
Curators Emeritus .....	Sami K. Hamarneh Susan F. Cannon
Research Associates .....	Derek J. De Solla Price Bern Dibner

#### ELECTRICITY AND MODERN PHYSICS

Curators .....	Bernard S. Finn Paul Forman
Historian .....	Susan J. Douglas
Research Associate .....	Gerald F. J. Tyne

#### EXTRACTIVE INDUSTRIES

Curator .....	John T. Schlebecker
Associate Curators .....	John N. Hoffman George T. Sharrer
Research Associate .....	Philip W. Bishop

#### MATHEMATICS

Curator .....	Uta C. Merzbach
---------------	-----------------

#### MECHANISMS

Curator .....	Otto Mayr
Research Associate .....	Edwin A. Battison

#### MEDICAL SCIENCES

Curator .....	Audrey B. Davis
Assistant Curator .....	Ramunas A. Kondratas

#### MECHANICAL AND CIVIL ENGINEERING

Curator .....	Robert M. Vogel
Research Associate .....	Charles T. G. Looney

#### MILITARY HISTORY

Curator .....	Craddock R. Goins, Jr.
Associate Curator .....	Donald E. Kloster
Research Associate .....	Anne S. K. Brown

#### NAVAL HISTORY

Curators .....	Philip K. Lundeberg Harold D. Langley
Research Associate .....	Lee Houchins

#### PHOTOGRAPHIC HISTORY

Curator .....	Eugene Ostroff
---------------	----------------

#### PHYSICAL SCIENCES

Curator .....	Deborah J. Warner
Associate Curator .....	Jon B. Eklund
Research Associate .....	Arthur Frazier

#### TRANSPORTATION

Curators .....	John H. White
	Robert C. Post
Associate Curator .....	Don H. Berkebile
Research Associates .....	Peter B. Bell
	Arthur D. Dubin
	Melvin H. Jackson

#### SENIOR HISTORIANS OFFICE

Senior Historian .....	Brooke Hindle
Senior Scientific Scholar .....	Robert P. Multhauf

#### NATIONAL PORTRAIT GALLERY

Director .....	Marvin S. Sadik
Assistant Director .....	Harold Francis Pfister
Administrative Officer .....	Barbara A. Hart
Historian .....	Marc Pachter
Curator of Painting and Sculpture .....	Robert G. Stewart
Curator of Exhibitions .....	Beverly J. Cox
Associate Curators of Painting and Sculpture .....	Monroe Fabian
	Ellen Miles
Curator of Prints .....	Wendy Wick
Curator of Photographs .....	William F. Stapp
Curator of Education .....	Kenneth Yellis
Editor of Publications .....	Frances S. Wein
Chief, Design and Production .....	Nello Marconi
Keeper, Catalog of American Portraits .	Mona Dearborn
National Survey Coordinator, Catalog of American Portraits .....	Richard K. Doud
Editor of the Charles Willson Peale Papers and Historian of American Culture .....	Lillian B. Miller
Acting Librarian .....	Katharine Ratzenberger
Senior Conservator .....	Felrath Hines
Senior Photographer .....	Eugene Mantie
Registrar .....	Suzanne Jenkins
Public Affairs Officer .....	Sandra Westin

#### OFFICE OF AMERICAN STUDIES

Director .....	Wilcomb E. Washburn
Administrative Assistant .....	Dorothy D. Blaska

#### OFFICE OF FOLKLIFE PROGRAMS

Director .....	Ralph Rinzler
Senior Folklorist .....	Peter Seitel
Ethnomusicologist .....	Thomas Vennum
Administrative Officer .....	Betty Beuck

[ cont. ]



Program Coordinator .....	Jeffrey LaRiche
Folklorists .....	Susan Kalčík
	Jack Santino
	Steve Zeitlin
Designer .....	Daphne Shuttleworth
Archivist .....	Richard Derbyshire

#### RENWICK "CELEBRATION" EXHIBITION

Exhibition Coordinator .....	Elaine Eff
Exhibition Assistant .....	Kristi Miller

## MUSEUM PROGRAMS

Assistant Secretary .....	Paul N. Perrot
Executive Assistant .....	William N. Richards
Special Assistant .....	W. Donald Duckworth
National Museum Act Coordinator ....	Vacant

#### CONSERVATION ANALYTICAL LABORATORY

Director .....	Robert M. Organ
Supervisor (Archaeometry) .....	Jacqueline S. Olin
Supervisory Conservator .....	Eleanor McMillan
Supervisory Conservation-Scientist ....	Timothy Padfield
Administrative Officer .....	Vernetta M. Williams

#### OFFICE OF EXHIBITS CENTRAL

Chief .....	James A. Mahoney
Assistant Chief .....	John C. Widener
Administrative Officer .....	William M. Clark, Jr.
Exhibits Specialist .....	Joseph W. Saunders
Chief Exhibits Editor .....	Linda S. DuBro
Chief of Production .....	John C. Widener
Supervisor, Exhibits Specialist .....	Kenneth R. Clevenger
Supervisor, Exhibits Specialist (Modelmaker) .....	Walter G. Sorrell

#### OFFICE OF HORTICULTURE

Director .....	James R. Buckler
Assistant Director .....	John W. Monday
Chief of Education Division .....	Lauranne C. Nash
Foreman, Grounds Management Division	Kenneth Hawkins
Foreman, Greenhouse Nursery Division	August A. Dietz IV
Exhibits Design Specialist .....	Kathryn L. Meehan

#### OFFICE OF INTERNATIONAL ACTIVITIES

Director .....	Kennedy B. Schmertz
Deputy Director .....	Richard T. Conroy
Program Officer .....	LeRoy Makepeace
International Liaison Specialist .....	Sandra Tilghman-Thomas

## OFFICE OF MUSEUM PROGRAMS

<b>Program Manager</b> .....	<b>Jane R. Glaser</b>
Administrative Assistant .....	Gwendolyn G. Baker
Training Program Coordinator .....	Nancy L. Welch
Native American Museum Training Coordinator .....	James A. Hanson
Conservation Information Program Coordinator .....	Elena Borowski
T.V. Production Specialists .....	Pete Erikson
	Eleanor Crow
Program Assistant .....	Janet Brennan
Museum Evaluator .....	Vacancy

## OFFICE OF THE REGISTRAR

<b>Registrar</b> .....	<b>Philip Leslie</b>
Assistant Registrar .....	Mary W. Lund
Management Analyst .....	Melva S. Elmer

## SMITHSONIAN INSTITUTION ARCHIVES

<b>Archivist</b> .....	<b>Richard H. Lytle</b>
Deputy Archivist .....	William A. Deiss
Associate Archivists .....	Alan L. Bain
	Richard V. Szary
Assistant Archivists .....	William R. Massa, Jr.
	James A. Steed
Historian .....	Pamela M. Henson
Supervisory Archives Technician .....	Norwood N. Biggs

## SMITHSONIAN INSTITUTION LIBRARIES

<b>Director</b> .....	<b>Robert M. Maloy</b>
Special Assistants .....	Silvio Bedini
	Jack Goodwin
Systems Assistant .....	Stephen Toney
Chief, Office of Administrative Services	Anthony J. Kohlrus
Administrative Officer .....	Mary C. Quinn
Assistant Director, Bibliographic Systems .....	Vija L. Karklins
Chief, Acquisitions Services .....	Mildred D. Raitt
Order Librarian .....	William B. Neff
Gift and Exchange Librarian .....	Sharon H. Sweeting
Chief, Bibliographic Support .....	Victoria Avera
Chief, Indexing Services .....	Mary Jane H. Linn
Senior Cataloger .....	Bertha S. Sohn
Chief, Binding Services .....	Mary J. Pierce
Conservator, Book Conservation Laboratory .....	Johannes H. Hyltoft
Special Projects Librarian .....	Neal T. Turtell
Assistant Director, Reader Services ....	Jean C. Smith
Chief, Central Information Services ....	Jack F. Marquardt
Chief Librarian, National Museum of Natural History .....	Sylvia Churgin
Anthropology Librarian .....	Janette K. Saquet
Botany Librarian .....	Ruth F. Schallert

[ cont. ]

Entomology Librarian .....	Margaret Smith
Museum Support Center Librarian ...	Karen Preslock
Chief Librarian, National Air and Space Museum .....	Catherine C. Scott
Chief Librarian, Smithsonian Astrophysical Observatory .....	Joyce M. Rey
Chief Librarian, National Zoological Park/Radiation Biology Laboratory/ Chesapeake Bay Center .....	Mary C. Gray
Zoo Librarian .....	Kay Kenyon
Chief Librarian, Smithsonian Tropical Research Institute .....	Alcira A. Mejia
Chief Librarian, National Museum of History and Technology .....	Frank A. Pietropaoli
Assistant Librarians .....	Charles G. Berger Barbara F. Veloz
Chief Librarian, Special Collections ....	Ellen B. Wells
Assistant Librarian .....	Mary Rosenfeld
Chief Librarian, Cooper-Hewitt Museum	Robert C. Kaufmann
Chief Librarian, Museum Reference Center .....	Rhoda Ratner
Chief Librarian, Museum of African Art	Janet L. Stanley

#### SMITHSONIAN INSTITUTION TRAVELING EXHIBITION SERVICE

<b>Director</b> .....	<b>Peggy Loar</b>
Publications Officer .....	Andrea Stevens
Public Affairs Officer .....	Eileen Harakal
Administrative Officer .....	Antonio Diez
Registrar .....	Emily Eyer
International Program Officer .....	Eileen Rose
Exhibitions Coordinators .....	Deborah Dawson Donald McClelland
General Exhibitions Program Officer ...	Anne R. Gossett
Exhibition Coordinators .....	Janice Driesbach Elizabeth Driscoll Betty Teller
American Studies Program Exhibition Coordinators .....	Martha Cappelletti Nancy Davis
Education Specialist, Education Program	Marjorie Share
Education Coordinator .....	Hedy Ehrlich

#### PUBLIC SERVICE

<b>Assistant Secretary</b> .....	<b>Julian T. Euell</b>
Executive Assistant .....	Vincent L. MacDonnell
Administrative Officer .....	Jewell S. Dulaney
Publications Coordinator .....	Glen B. Ruh

#### ANACOSTIA NEIGHBORHOOD MUSEUM

<b>Director</b> .....	<b>John R. Kinard</b>
Administrative Officer .....	Audrey Archer
Historian .....	Louise D. Hutchinson
Exhibits Program Manager .....	Victor Govier



Supervisory Visual Information Specialist .....	Sharon Reinckens
Supervisory Exhibits Specialist .....	James Mayo
Exhibits Specialist .....	Omar Wynn
Photographer .....	Christopher Capilongo
Education Specialist .....	Zora Martin-Felton

*DIVISION OF PERFORMING ARTS*

<b>Director</b> .....	<b>James R. Morris</b>
Research Specialist .....	Sharyn Huriaux Reitz
Business Manager .....	Joe Reed
Smithsonian Central Box Office Manager	Ann Norton
Director, Jazz and American Culture Programs .....	Martin Williams
Director, Chamber Music Programs ....	James M. Weaver
Director, Program in Black American Culture .....	Bernice Johnson Reagon
Director, Museum Programs .....	Shirley Cherkasky
Director, Education Services .....	Cynthia A. Hightower
Director, Marketing and Communications .....	Sally Roffman
Technical Director .....	Harold A. Closter
Public Affairs Officer .....	Manuel J. Melendez

*INTERNATIONAL EXCHANGE SERVICE*

<b>Director</b> .....	<b>John E. Estes</b>
-----------------------	----------------------

*OFFICE OF ELEMENTARY AND SECONDARY EDUCATION*

<b>Education Program Coordinator</b> .....	<b>David Estabrook</b>
Special Education Coordinator .....	Janice Majewski
Education Specialist .....	Ann Bay
Program Assistant .....	Evelyn Reese

*OFFICE OF SMITHSONIAN SYMPOSIA AND SEMINARS*

<b>Director</b> .....	<b>Wilton S. Dillon</b>
Associate Directors .....	Dorothy Richardson
	Carla M. Borden

*OFFICE OF TELECOMMUNICATIONS*

<b>Director</b> .....	<b>Nazaret Cherkezian</b>
Senior Telecommunications Specialist ..	William C. Grayson*
Telecommunications Specialist .....	Paul B. Johnson
Radio Production Specialist .....	Ann M. Carroll
Production Coordinator .....	Lawrence E. Kline, Jr.

*SMITHSONIAN EXPOSITION BOOKS*

<b>Acting Director</b> .....	<b>Glen B. Ruh</b>
Senior Editor .....	Vacant
Business Manager .....	Thomas A. Hoffman

*SMITHSONIAN INSTITUTION PRESS*

<b>Director</b> .....	<b>Felix C. Lowe</b>	
Director Emeritus .....	Edward F. Rivinus	
Assistant Director and Managing Editor, General Publications .....	Maureen R. Jacoby	[ cont. ]

\* Deceased April 15, 1980.

Assistant Director and Managing Editor, Series .....	Albert L. Ruffin, Jr.
Assistant to the Director and Administrative Officer .....	Georgiana Hahn
Production Manager .....	Lawrence J. Long
Design Manager .....	Janet Stratton
Distribution Manager .....	Frederick H. MacVicar

#### SMITHSONIAN MAGAZINE

<b>Editor and Publisher</b> (on leave) .....	<b>Edward K. Thompson</b>
Publisher (acting) .....	Joseph J. Bonsignore
Managing Editor .....	Donald B. Moser
Executive Editor .....	Ralph Backlund
Members, Board of Editors:	
Caroline Despard	Paul Trachtman
Grayce P. Northcross	John P. Wiley, Jr.
Edwards Park	Richard L. Williams
Bennett Schiff	
Associate Publisher, Advertising .....	Thomas H. Black
Associate Publisher, Circulation .....	Anne Keating
Production .....	Nannie Shanahan
Business .....	Carey O. Randall

#### VISITOR INFORMATION AND ASSOCIATES' RECEPTION CENTER

<b>Director</b> .....	<b>Mary Grace Potter</b>
Deputy Director .....	Carolyn Clampitt
Program Editor .....	Maria Heasley
Program Manager, Staff Volunteer Services .....	Sally Covell
Manager, Public Inquiry Mail .....	Ann Perper
Coordinator, Group Orientation Program	Jennifer Williams
Program Coordinator, Telephone .....	Gretchen Latimer
Office Manager .....	Bee Gee Livsey
Assistant Program Coordinator, Weekends .....	Lois Brown

#### MEMBERSHIP AND DEVELOPMENT

<b>Director</b> .....	<b>James McK. Symington</b>
-----------------------	-----------------------------

#### OFFICE OF DEVELOPMENT

<b>Deputy Director</b> .....	<b>E. Jeffrey Stann</b>
Associate Development Officer .....	Arthur W. Gardner

#### NATIONAL ASSOCIATE PROGRAM

<b>Director</b> .....	<b>Robert H. Angle</b>
-----------------------	------------------------

#### Regional Events

Program Manager .....	Charlene James
Program Assistants .....	Amy Kotkin
	MaryBeth Mullen

### *Contributing Membership*

Program Manager ..... Jessie Brinkley

### *Selected Studies*

Program Manager ..... Nancy Starr  
Program Assistant ..... Abby Yochelson

### *Associates Travel*

Program Manager ..... Jacqueline Austin  
Deputy Program Manager ..... Prudence Clendenning  
Foreign Study Tour Program Manager .. Barbara Tuceling

### *RESIDENT ASSOCIATE PROGRAM*

<b>Director</b> .....	<b>Janet W. Solinger</b>
Associate Director .....	Michael C. Alin
Administrative Officer .....	Eugene S. Szopa
Program Coordinators .....	Paul J. Edelson
	Edward P. Gallagher
	Moya B. King
	Christine Parker
Associate Program Coordinators .....	Diane Lynn Arkin
	Natalia Krawec Hanks
	Alice Dana Spencer
Public Information Specialist .....	Helen A. Marvel
Art Director .....	Margaret V. Lee
Membership Coordinator .....	Jeanne B. George
Registration Manager .....	Virginia M. Cronin
Assistant Registration Manager .....	Xenia Sorokin Arnelle
Volunteer Coordinator .....	Elinor K. Emlet

## **ADMINISTRATION**

<b>Assistant Secretary</b> .....	<b>John F. Jameson</b>
Director, Agenda Office .....	Robert L. Farrell
Contracting Officer, Contracts Office ...	Elbridge O. Hurlbut
Director, Management Analysis Office ..	John G. Motheral
Director, Office of Computer Services ..	Stanley A. Kovy
Director, Office of Equal Opportunity ..	Will Douglas, Jr.
Director, Office of Facilities Services ...	Tom L. Peyton, Jr.
Director, Office of Design and Construction .....	Phillip K. Reiss
Director, Office of Plant Services ....	Kenneth E. Shaw
Director, Office of Protection Services	Robert B. Burke, Jr.
Director, Office of Personnel Administration .....	Howard Toy
Director, Office of Printing and Photographic Services .....	James H. Wallace, Jr.
Director, Office of Programming and Budget .....	Jon E. Yellin
Director, Office of Supply Services ....	Harry P. Barton
Director, Travel Services Office .....	Ann H. Krafthofer

[ cont. ]



## FACILITIES SERVICES

<b>Director</b> .....	<b>Tom L. Peyton, Jr.</b>
Director, Design and Construction ....	Phillip K. Reiss
Director, Plant Services .....	Kenneth E. Shaw
Director, Protection Services .....	Robert B. Burke, Jr.

## FINANCIAL MANAGEMENT ACTIVITIES

<b>Treasurer</b> .....	<b>Christian C. Hohenlohe</b>
Assistant to the Treasurer .....	John R. Clarke
Financial Analyst .....	Frances C. Rooney
Director, Accounting Office .....	Allen S. Goff
Assistant Director, Accounting Services	William B. Henegan
Assistant Director, Financial Systems ..	John P. Howser
Director, Office of Grants and Risk Management .....	Phillip H. Babcock
Assistant Director, Grants Management	Rick R. Johnson
Assistant Director, Risk Management ..	Alice R. Bryan
Director, Investment Accounting Division .....	Ernest A. Berger*
Director, Business Management Office ..	Richard O. Griesel
Controller, Business Management Office	Ohlen J. Boyd
Director, Smithsonian Museum Shops ..	James J. Chmelik
Director, Belmont Conference Center ...	Mary B. Force
Director, Mail Order Division .....	David H. Ehrlich

## OFFICE OF THE GENERAL COUNSEL

<b>General Counsel</b> .....	<b>Peter G. Powers</b>
Associate General Counsel .....	Alan D. Ullberg
Assistant General Counsels:	
Robert A. Dierker	George S. Robinson
Marie C. Malaro	Marsha S. Shaines
Suzanne D. Murphy	Sharon A. White
	James I. Wilson

## OFFICE OF COORDINATOR OF PUBLIC INFORMATION

<b>Coordinator</b> .....	<b>Lawrence Taylor</b>
Administrative Officer .....	Eileen Hall
<i>Office of Public Affairs</i>	
Director .....	Alvin Rosenfeld
Special Assistant .....	Richard Friedman
Science Writer .....	Madeleine Jacobs
Public Information Specialists .....	David Maxfield
	Linda St. Thomas
Publications Officer .....	Susan Bliss
Writer-Editors .....	Mary Combs
	Johnnie Douthis
	Katheryn Lindeman
	Lilas Wiltshire

---

\* Retired August 1980.

*Office of Congressional Liaison*

Special Assistant to the Secretary .....	Margaret Hird
Congressional Liaison Assistant .....	Carey Wilkins

*Office of Special Events*

Director .....	Barbara Spraggins*
Assistant Director .....	Marilyn Hughes

WOODROW WILSON INTERNATIONAL CENTER  
FOR SCHOLARS

Director .....	James H. Billington
Deputy Director .....	Prosser Gifford
Editor .....	Peter Braestrup
Librarian .....	Zdenek V. David
Publications Officer .....	Elizabeth Dixon
Assistant Director for Administration ..	William M. Dunn
Secretary, Kennan Institute .....	Abbott Gleason
Coordinator, East Asia Program .....	Harry Harding
Secretary, American Society and Politics Program .....	Michael J. Lacey
Secretary, Latin American Program ....	Abraham F. Lowenthal
Assistant Director for Development ....	George Liston Seay
Assistant Director for Fellowships .....	Ann Sheffield
Executive Assistant to the Director .....	Mernie Wright Weathers
Secretary, International Security Studies Program .....	Samuel F. Wells, Jr.

JOHN F. KENNEDY CENTER FOR THE PERFORMING ARTS

Honorary Chairmen .....	Mrs. Jimmy Carter	
	Mrs. Gerald R. Ford	
	Mrs. Richard M. Nixon	
	Mrs. Lyndon B. Johnson	
	Mrs. Aristotle Onassis	
	Mrs. Dwight D. Eisenhower**	
Chairman of the Board of Trustees ....	Roger L. Stevens	
Vice Chairmen .....	Charles H. Percy	
	Henry Strong	
Secretary .....	Frank N. Ikard	
Assistant Secretary .....	Charles Woolard	
Treasurer .....	W. Jarvis Moody	
Assistant Treasurers .....	James F. Rogers	
	William H. Ryland	
	Henry Strong	
General Counsel .....	Harry C. McPherson, Jr.	
Associate Counsel .....	William W. Becker	
Artistic Director .....	Marta Istomin	[ cont. ]

\* The former Director of Special Events, Jeanette Gladstone, was deceased January 4, 1980. Barbara Spraggins was appointed to the position July 13, 1980.  
\*\* Deceased November 1, 1979.

Director of Operations .....	Thomas R. Kendrick
Deputy Director of Operations .....	Geraldine M. Otremba
General Manager of Theaters .....	Judith O'Dea Morr
Associate Manager of Theaters .....	Richard H. Owens
Controller .....	Clifton B. Jeter
Director of Development .....	Jillian H. Poole
Director of Building Services .....	Edward G. Schessler
Budget Officer .....	Verda Welch
Director of Education .....	Jack W. Kukuk
Marketing Manager .....	John H. McAuliffe
Director of Public Relations .....	Leo Sullivan
Manager of Sales .....	Carl A. Matte
Minority Affairs Consultant .....	Archie L. Buffkins
Management Systems Consultant .....	Alexander Morr

## NATIONAL GALLERY OF ART

<b>President</b> .....	<b>John R. Stevenson</b>
Vice President .....	Carlisle H. Humelsine
<b>Director</b> .....	<b>J. Carter Brown</b>
Assistant Director .....	Charles P. Parkhurst
Dean, Center for Advanced Study in the Visual Arts .....	Henry A. Millon
Treasurer .....	Robert C. Goetz
Administrator .....	Joseph G. English
Secretary-General Counsel .....	Carroll J. Cavanagh
Construction Manager .....	Hurley F. Offenbacher
Assistant to the Director, Music .....	Richard Bales
Assistant to the Director, Public Information .....	Katherine Warwick
Assistant to the Director, Special Events	Carol M. Fox
Planning Consultant .....	David W. Scott
Curator of American Painting .....	John H. Wilmerding
Chief Librarian .....	J. M. Edelstein
Chief, Education Department .....	Margaret I. Bouton
Head, Extension Program Development .	Ruth R. Perlin
Head, Art Information Service .....	Elise V. H. Ferber
Editor .....	Theodore S. Amussen
Chief, Photographic Laboratory .....	William J. Sumits
Curator of Photographic Archives .....	Ruth Rowe Philbrick
Senior Conservator .....	Victor C. B. Covey
Head, Exhibitions and Loans .....	Jack C. Spinx
Head, Department of Design and Installation .....	Gaillard F. Ravenel
Registrar .....	Peter Davidock, Jr.
Curator of Early Italian and Tuscan Painting .....	David A. Brown
Curator of Graphic Arts .....	Andrew C. Robison, Jr.
Curator of French Painting .....	David E. Rust
Curator of Sculpture .....	Douglas Lewis, Jr.
Curator of Twentieth-Century Art .....	E. A. Carmean, Jr.
Curator of Northern and Later Italian Painting .....	Sheldon Grossman
Curator of Northern European Painting .	John O. Hand
Curator of Dutch Painting .....	Arthur K. Wheelock



Curator of Spanish Painting .....	Anna Voris
Assistant Dean, Center for Advanced Study in the Visual Arts .....	Marianna Shreve Simpson
Assistant Administrator .....	George W. Riggs
Associate Secretary-General Counsel ...	Elizabeth A. Croog
Assistant Secretary .....	Kathryn K. Bartfield
Personnel Officer .....	Michael B. Bloom

## READING IS FUNDAMENTAL, INC.

<b>President</b> .....	<b>Ruth P. Graves</b>
Executive Assistant .....	Nancy J. Lewis
Deputy National Director .....	Arnold W. Baker
Director of Development .....	Don E. Walther
Director of Field Services .....	Carolyn Gunn Thorne
Director of Finance and Administration .	Christina D. Mead
Director of Publications .....	Kristine S. Wilcox
Director, Resource Coordination and Support Services .....	Barbara B. Atkinson
Resource Coordination and Support Services Officer .....	Ryszard A. Obuchowicz
Communications Control Coordinator ..	Dewan R. Vines
Regional Program Coordinators .....	Curtis L. Brown
	Denise Bulluck
	Jessie L. Lacy
	Barbara Melnicove
Subcontract Officer .....	Peter J. Shaw
Finance Manager .....	Donna M. Wagley
Assistant Finance Manager .....	John A. Crance
Invoice Coordinator .....	Christine K. Moore
Office Coordinator .....	Hermine Henry
Data Retrieval Manager .....	Jill C. Gaines
Manager, Supplies and Materials .....	Calvin L. McFadden

## SMITHSONIAN SCIENCE INFORMATION EXCHANGE, INC.

<b>President</b> .....	<b>David F. Hersey</b>
Vice President, Scientific Affairs Division	Donald A. Elliott
Vice President, Data Processing Division	Martin Snyderman
Special Assistant to the President and Treasurer .....	Thomas P. Bold, Jr.
Assistant Treasurer and Secretary .....	Evelyn M. Roll
Marketing Manager .....	Vacant

### CURRENT CANCER RESEARCH PROJECT ANALYSIS CENTER

<b>Director</b> .....	<b>Donald A. Elliott</b>
Deputy Director .....	Lily Ayad

### MEDICAL, BEHAVIORAL AND SOCIAL SCIENCES DIVISION

<b>Director</b> .....	<b>Donald A. Elliott</b>
Deputy Director .....	Charlotte M. Damron
Chief, Medical Sciences Branch .....	Charlotte M. Damron
Chief, Behavioral Sciences Branch .....	Rhoda Goldman
Chief, Social Sciences Branch .....	Ann Riordan

*NATURAL SCIENCES AND ENGINEERING DIVISION*

<b>Acting Director</b> .....	<b>Donald A. Elliott</b>
Deputy Director .....	Samuel Liebman
Chief, Chemistry Branch .....	Samuel Liebman
Chief, Agricultural Sciences Branch ....	William T. Carlson
Chief, Biological Sciences Branch .....	Vacant
Chief, Materials and Engineering Branch	William H. Payne
Chief, Physics, Mathematics and	
Electronics Branch .....	Robert Summers
Acting Chief, Earth Sciences Branch ....	Chalmer G. Dunbar

*DATA PROCESSING DIVISION*

<b>Director</b> .....	<b>Martin Snyderman</b>
Deputy Director .....	Bernard L. Hunt
Manager, Systems Development Branch	Bernard L. Hunt
Manager, Input Services Branch .....	Jack Devore
Manager, Programming and Reports	
Services Branch .....	Robert A. Kline
Manager, Computer Operations Branch .	Paul Gallucci











